

THE

OPHTHALMOSCOPE

A MONTHLY REVIEW OF CURRENT OPHTHALMOLOGY.

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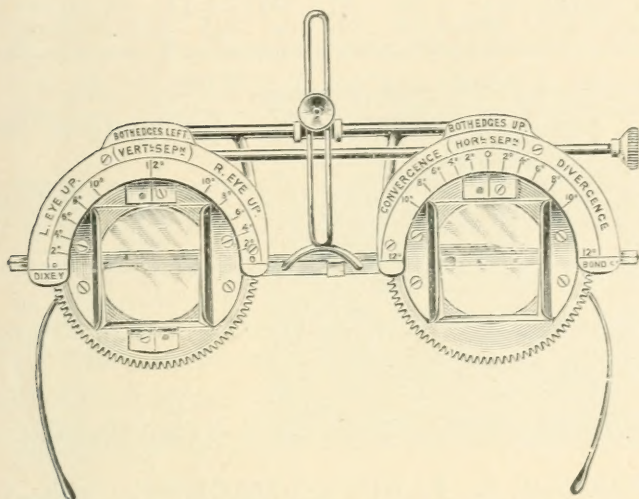
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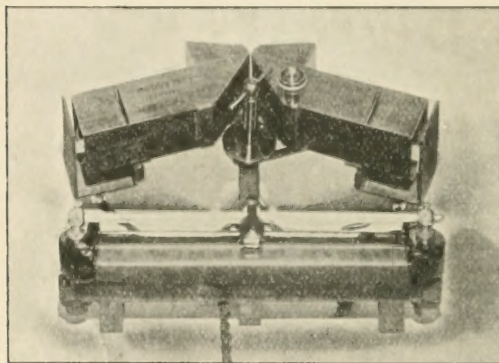
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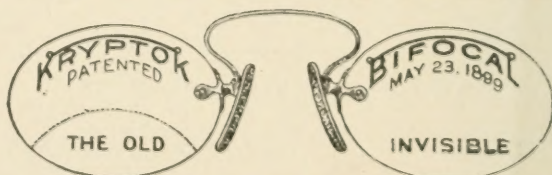
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THE OPHTHALMOSCOPE.

A MONTHLY REVIEW OF CURRENT OPHTHALMOLOGY.

VOL. V.—No. 6.]

JUNE 1, 1907.

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ORIGINAL COMMUNICATIONS.

THE FILTERING CICATRIX IN THE TREATMENT OF GLAUCOMA: AN IMPROVED OPERATION.

BY

H. HERBERT, F.R.C.S.,

LT.-COL. I.M.S., BOMBAY, INDIA.

The permeable sclero-corneal cicatrices by which glaucomatous tension may be relieved, are to be classed in three main clinical groups—the “cystoid,” the merely “fistulous,” and the truly “filtering.”

The term “filtering” should be restricted to smooth even scars which evidently allow aqueous to pass through them, but which present no dark points which we can accept as fistulous openings.* Some ophthalmologists are, I believe, a little sceptical as to the existence of such cicatrices. But in and about Bombay there are at present probably some hundreds of people with eyes presenting such scars as the result of operation for cataract extraction, in which an unusually extensive and fairly broad conjunctival flap has been utilized. Such a conjunctival flap has been very frequently made use of in Bombay as a safeguard against infection of the wound in an eye with unhealthy conjunctiva.† The elastic conjunctival flap at once shrinks. It adheres to the episcleral tissue before there is any union of the underlying sclero-corneal incision. The aqueous, then retained, refills the anterior chamber, separates the lips of the deep wound, and stretches the conjunctival covering. Many of our cataract patients have been sent out of hospital with the sclero-corneal incision distinctly open, seen through the conjunctiva as a gap $\frac{1}{2}$ mm. or more broad, and with the eye decidedly soft.

* The typical subconjunctival *fistula* is recognizable as a dark point underlying a “filtration area” of conjunctiva. The latter is a pale, transparent vesicular area, usually 2 or 3 mm. or more in breadth, defined, and more or less elevated, and in dark and yellow-skinned races generally sharply outlined by the dark colour of the surrounding conjunctiva, which is intensified by an accumulation of pigment washed out of the vesicular patch.

There are other smaller pale patches of conjunctiva, of minimal elevation, more or less opaque, and not vesicular. Any dark central underlying points which they may present evidently indicate merely localised filtration and not open fistulous tracks. We have seen such scars in glaucomatous eyes treated by subconjunctival prolapse of iris. The prolapse in these cases had been drawn out to a thread before being cut short.

† Nowadays, when the deep wound is completely covered by a conjunctival flap, the latter is always narrowed very much for some portion of its extent.

The final result of such a wound has been evidently attained in numbers of eyes which have been seen years after operation (in one case nine years). The central portion of the scar remains visible under the conjunctiva as a broad grey line. The conjunctiva appears at the first glance normal, but it is œdematous, as shown by the abnormal size and depth of the pits produced by light touches with the point of a probe. The degree of œdema can be readily estimated by using the probe on the corresponding portion of the fellow eye, or below the cornea of the same eye. The œdema, although general about the scar line, is usually rather more marked about one portion of it than elsewhere. Exaggeration of the œdema can be brought about by finger-pressure upon the globe, applied for half a minute through the lower lid. In our Indian patients additional evidence of filtration of aqueous is not infrequently afforded by some ill-defined local pallor of the conjunctiva, due to washing away of the normal pigment. The tension of these eyes is normal, or only very slightly sub-normal, but it may be lowered quickly by pressure upon the eye.

The importance of this observation lies in the fact that it has been so frequently repeated, and that it applies to a condition apparently in no degree fortuitous, although unintentionally produced. It is evidently the certain result of a large cataract incision covered in as above mentioned. It is, on the other hand, not produced in the sub-conjunctival operations of Czermak and others, in which the conjunctival covering remains normally tense. It is exactly the condition which has been long desired, but never attained with any approach to regularity, in the treatment of glaucoma.* We must therefore acknowledge the ideal iris-free filtering cicatrix as a practical entity. But the problem of its realization with quite a small wound has still to be considered. Lagrange† has almost certainly obtained the desired result in some cases by his operation of sclerectomy, but his description—"le lambeau conjonctival soulevé, tomenteux, transparent"—indicates rather the formation of a sub-conjunctival fistula as his ordinary result.

The iris-free sub-conjunctival fistula has never yet, I believe, been shown to be dangerous or objectionable, provided, as is generally the case, the ocular tension is not reduced by it much below normal. But can one always guarantee that a fistula shall

* I know of a woman now with a perfect filtering cicatrix, the result of a simple iridectomy for glaucoma, performed six years ago. The iris is quite free from the line of the scar, and there is no obvious explanation of the condition of the scar in this case.

† *Archiv. d'Ophthalmologie*, vol. 1900. See THE OPTHALMOLOGIST, 1900, p. 574.

not be too wide? It was because we had not sufficient control over the size of the resulting fistula that we, in Bombay, gave up the method of operating for glaucoma by sclerotomy with conjunctival infolding.† In the attempt to realize the typical filtering cicatrix we cannot now rest content without a fair guarantee against both excess and defect in result. Knowing that the best is attainable, we have reason to be dissatisfied with cure by fistulous cicatrix, however much this may be preferable to no cure at all.

In April, 1906, I began operating upon the following principle: By making one or both lips of a small sclero-corneal incision as jagged and uneven as possible (*see* fig. A., for example), there was a reasonable hope, not only of preventing primary union, but also of securing sufficient absorption of the projecting teeth of non-vascular corneal tissue to produce a permanently weak scar. Although it is not practicable to produce a surface quite like that shown in fig. A., still, operating with a very narrow knife, one can make a sclero-corneal wound surface very uneven indeed.



FIG. A.



FIG. B.

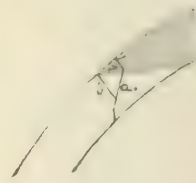


FIG. C.

NOTE.—Figs. B and C show the direction of the incisions correctly, but the position of *a* should probably be more to the right, in order to make the diagrams applicable to the middle of the transverse wound. Possibly there the apex of the wedge reaches the posterior surface of the cornea.

Without going into detail over a method which has now been abandoned, I may mention that in all sixty operations for primary glaucoma by "jagged incision," with various modifications, have been performed.

The first attempt was in an absolutely glaucomatous eye, which soon disappeared from observation. The second and third attempts were on the two eyes of a patient who has been seen as late as eleven months after operation. In this patient, most satisfactory filtering cicatrices have formed. But, on the whole, the method proved a trifle uncertain, although ordinarily excellent results were obtained, so far as they were observed. In some eyes fistulous scars have developed, and in a few there was failure to relieve tension. One of the modifications tried

† *Trans. Ophthalm. Society*, Vol. XXIII, 1903. *See* THE OPHTHALMOSCOPE, 1904, p. 432.

was the addition of a small scleral excision with scissors, after Lagrange.* The effect of this addition proved uncertain and untrustworthy.

Free sawing was found to be impracticable in cases of acute glaucoma, operated upon under combined adrenalin and cocaine,† since then the anæsthesia was not quite complete. It was in such a case that the modification was first adopted of simply isolating a single wedge of corneo-scleral tissue, as seen between the lines *a* and *b* in Fig. B. Such a strip of tissue has practically all of its blood supply cut off. It remains attached but slightly to the conjunctiva near the limbus. If left in position, therefore, it may be likened to a disconnected graft of fibrous tissue. After the operation it becomes somewhat displaced forwards, at least for a time, together with the overlying conjunctiva, which is carried forward by escaping aqueous. The bit of tissue is debarred from early re-union in its original bed, and must become vascularized afresh, possibly from the conjunctiva. Like any completely separated graft, it may be confidently expected to shrink in bulk. Enough of it may remain permanently to cover in the gap in the cornea and sclerotic, and so prevent the formation of an open fistulous track, while the shrinkage should provide for filtration. This principle of partial absorption of isolated tissue is the same as in the earlier jagged incision or promiscuous sawing operations. But obviously the separation of a single measurable strip of tissue offers facilities for securing control and uniformity which the earlier method did not possess.

For a short time the isolation of a strip of tissue was commonly combined with more or less general sawing. But soon the latter was omitted altogether. In all thirty-eight wedge-isolation operations have been performed, the large majority without any promiscuous sawing added. The earliest of them was performed on December 22nd, 1906. Only six of them have been under observation for three months or over, so that it may seem rather early to report upon the subject. However, my leaving India, where all the patients are, settles this question. And my former experience of various methods of producing previous cicatrices for the cure of glaucoma has shown that almost invariably the

* I have performed Lagrange's operation, pure and simple, although with considerably reduced incision, on two eyes only. Only one of them remained under observation afterwards—an absolutely glaucomatous eye. In this a fistulous cicatrix has formed, and the tension is about normal.

† All of our glaucoma operations were performed under local anæsthesia—in some cases cocaine alone, but much more often cocaine preceded by adrenalin. In congestive glaucoma two, or possibly three, instillations of adrenalin chloride were made during the five minutes preceding the cocaine period: and four instillations of cocaine, 4 per cent., were made during fifteen minutes. In acute cases the cocaine period was still further prolonged. The only really painful part of the operation in acute glaucoma was found to be the drawing of the iris out through the wound.

final result as regards tension can be judged pretty accurately in considerably less than three months. The results, so far as they have gone, have been unexpectedly uniform and trustworthy. There has been only one (? temporary) partial return of tension, explained below, and there appears to be little or no tendency to the formation of fistulae. So far as we have seen, the desired filtering scars appear to be developing with regularity* throughout. Our promise of success has been most encouraging, and we have operated in all grades and stages of primary glaucoma, except the most acute.

Apart from this, there are two additional justifications for venturing now to recommend this operation for trial:—

(1) Owing to the small incision needed, and perhaps owing in some measure to the slow escape of aqueous during the very deliberate cutting, the operation has always proved to be a perfectly safe one, whatever the grade of the glaucoma.

(2) In case of possible failure, this small operation does not prejudice subsequent operative treatment on the usual lines.

The section (diagrams B, C, and D) immediately above the cornea is by no means difficult to make, although it requires care and absolute adherence to rule.



FIG. D.



FIG. E.

NOTE.—The two upper lines in Fig. D represent the conjunctival incisions nearly completing a conjunctival flap.

The knife used is an old and worn Graefe, ground down to a breadth of about $\frac{1}{8}$ mm. It must taper gradually to the point. One blade which served us very well tapered from point to heel. It measured about $1\frac{1}{4}$ mm. in width at the heel and was 26 mm. long. The eye is fixed with forceps at the inner side. After the counter-puncture has been made there is little or no trouble in the matter of fixation during the slow section, because with so small an incision the knife lying in the wound suffices almost to prevent upward rotation of the globe. The conjunctival puncture is made $1\frac{1}{2}$ mm. or 2 mm. above the projected line of incision, the loose conjunctiva being then pushed down in a fold with the point of the knife. In making the sclero-corneal puncture quite close to the cornea, the direction of the blade is nearly

*There has been variation in the degree and duration of the elevation of the conjunctival flap by escaping aqueous, and in the amount of surrounding conjunctival oedema. In some cases finally neither of these conditions was present to an appreciable degree, though it could be evoked by finger pressure upon the eye. In some cases, particularly where the iridectomy comprised the whole width of the iris, there was slight drawing up of the iris, showing adhesion to the line of the wound, and in one case there was a small visible incarceration of the iris.

transverse. It must point but little downwards, since otherwise a fair share of the section is not accomplished in the puncture. Our very small primary incision is largely accomplished in the acts of puncture and counter-puncture, and if too much tissue is left to be cut in the counter-puncture, the latter cannot be made without the use of an objectionable degree of force. The cutting edge of the knife is directed either exactly upwards or slightly backwards, although this latter inclination makes the counter-puncture a little less easy. The course of the blade within the anterior chamber need not extend to more than 3 mm. or 4 mm. The point is then brought a little forward to engage in the posterior surface of the cornea. It should reach the scleral surface quite close to the corneal boundary. As it slowly emerges, some aqueous usually leaks out beside it, raising the neighbouring conjunctiva before the latter is fully pierced. As soon as the point is well through, the blade is turned to direct the cutting edge downward, and the puncture and counter-puncture are enlarged thus.

This downward enlargement* is commonly sufficient when almost the whole width of the blade can be seen through the cornea, the knife being momentarily twisted to show this. It is needed to allow the blade to be twisted freely and placed correctly for the forward cut (b). But before this secondary forward cut is made, the primary incision may be further enlarged upwards and somewhat backwards, taking care to leave a bridge of superficial sclerotic still undivided.

The blade is then twisted, and the secondary incision (b) forward and upward, exactly perpendicular to the surface, is made with slow, gentle, to-and-fro movements. The knife-edge should aim to reach the surface almost exactly at the corneal margin, about the middle of the small incision. With ordinary care, gentleness, and deliberation, there is no difficulty in completing this forward sclero-corneal cut without dividing the overlying conjunctiva, even though the latter be not elevated at all by aqueous. The primary upward incision is then completed subconjunctivally to isolate the wedge. The latter should be quite narrow (see below). Its vertical measurement should be $\frac{1}{2}$ — $\frac{3}{4}$ mm. In completing the section, therefore, the knife-edge has usually to be turned more or less forward, as in Fig. C. It is obvious that precision and care are needed in locating and directing these cuts correctly, especially the forward cut (b).

*If the section were made somewhat larger from the beginning, it would, of course, be unnecessary to turn the cutting edge downward at all. But in order to allow for possible small errors of judgment in using the knife at a very acute angle to the surface, it has seemed wise to keep the distance between the first entry and emergence of the blade near the minimum.

since quite small variations may influence the depth of the wedge very considerably.

It is easy, by twisting the blade a little when making the counter-puncture, to produce a free escape of aqueous beneath the conjunctiva, thus insuring it against the possibility of accidental section. But, if this be done, one cannot see well enough through the distended mucous membrane for the exact outlining of the sclero-corneal strip of tissue.

It still remains to cut a conjunctival flap, for a sufficient opening is required for the performance of an iridectomy, and it appears advisable to arrange for elastic shrinkage and subsequent distension and elevation of the conjunctiva over the wound. I prefer, however, to leave a small bridge of conjunctiva undivided above, to exclude the possibility of the flap becoming bent downwards over the cornea, as happened in one "jagged incision" operation upon an acutely glaucomatous eye where the conjunctiva was somewhat swollen.

The iridectomy is, where possible, merely a small peripheral buttonhole, made solely for the purpose of preventing adhesion or incarceration of iris in the wound. For the proper performance of this minute iridectomy, and to aid in the subsequent retraction of the iris, the pupil should be always contracted, if possible, by eserine beforehand.

It may be broadly stated that the scheme and purpose of this operation are much the same as in Lagrange's sclerectomy. In the latter operation, by excision with scissors, a groove is left in the sclerotic of somewhat uncertain depth. In the plan which I have followed, the sclero-corneal gap remains covered in by the detached strip of tissue, and, being cut from within, should bear a more definite and constant relation (as yet undetermined) to the deep surface of the cornea. The dependence upon absorption of tissue—a process of nature—in the final adjustment of the result, appears sound. At least, it was thus that we came to explain the consistent results obtained formerly as regards tension, in our operations by subconjunctival prolapse of iris.

We commonly bandage the eye for a day only, and afterwards protect it with a shield. If there is any tendency to the formation of synechiae, as there frequently is after operation for acute or sub-acute glaucoma, atropin is used freely. The tension of the eye should be watched for some time. In one or two highly congested eyes massage was needed the day after operation to reduce a return of tension, evidently due to glueing together of the wound surfaces by lymph and blood-clot. In a number of eyes the tension remained very low, -2 or -3, for a variable period after operation. The longest period yet observed of this low tension was one of from three to four weeks.

In the fellow eye of this patient, operated upon at the same time, there was a similar low tension period of about three weeks, followed by a rise to + 1. In this eye—the one temporary failure already alluded to—the isolated strip of tissue was too broad. It measured over a millimetre vertically. There was thus an overlapping plate of tissue constantly pressed back upon the sclerotic by the weight of the upper lid. Union took place above, and there was only imperfect filtration about the two ends of the strip. Relying upon the expected slow shrinkage of the strip, and the patient fortunately remaining under observation, we merely reduced the tension daily by massage, aided by a little eserine. When seen last, nearly $2\frac{1}{2}$ months after operation, the tension had become, so far as one could judge, normal, and the vision had improved a little. But in such a case one can hardly feel satisfied until the tension becomes slightly subnormal. In another eye the tension rose again for a few days only, about three weeks after operation.

There still remains a small matter which seems to demand investigation. In a few absolute glaucomas, and in one subacute case, where a temporary preliminary effect was desired, I have recently tapped the anterior chamber in a very effective way. Selecting a convenient spot, usually down and out, and pushing up the conjunctiva so as to give a valvular covering, I have thrust the narrow knife ($\frac{1}{4}$ mm.) into the periphery of the anterior chamber, locating the scleral puncture at rather more than a millimetre from the corneal margin. A very small incision, $1\frac{1}{2}$ -2 mm. long, was thus made parallel to the corneal circumference, and then at each end, and generally also at the middle of the small incision, the knife-edge was turned forward and small subsidiary cuts made forward to the corneal margin.

Thus, a small single or double tongue of sclero-corneal tissue was marked out subconjunctivally (*see* Fig. E). Receiving their nourishment, for the time at least, mainly through the cornea to which they remain connected, these partly isolated tongues have shown no tendency to rapid reunion. The tension in these eyes has remained low, and the conjunctiva over the small wounds has remained elevated, or could be elevated at once by forcing out a little aqueous by finger-pressure on the globe. None of these eyes was under observation for more than two to three weeks, but in none of them did the tension definitely rise again. Is it possible that this simple and trivial proceeding can permanently reduce the tension of a glaucomatous eye? It seems hardly possible. But, at least, the duration of the relief might be determined. This small complex incision might, at any rate, replace ordinary paracentesis in many cases. In making the forward cuts, the point of the knife

is apt to catch in the iris a little. But if any real trouble were experienced in this respect, they might easily be made with Lang's blunt-pointed synechia knife. With the pupil widely dilated, there would be some danger of pricking the lens with a sharp-pointed knife.

A CONGENITAL ANOMALY OF THE SCLERA: "PSEUDO-COLOBOMA."

BY

PERCIVAL J. HAY, M.D.,

SHEFFIELD, ENGLAND.

The following congenital anomaly of the eyes was found in a still-born child, the subject of a whole list of other congenital deformities. I have not been able to find any mention of the condition in ophthalmic literature, and in view of the fact that the appearance is so striking that it could scarcely escape attention, this case is, perhaps, the first of its kind to come under the notice of the ophthalmic surgeon. It may be described as a "pseudo-coloboma" of the sclera.

O. N., the fifth child, was born at full time. The presentation

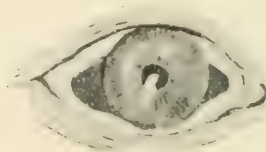


FIG. 1.

was a "breech." The aftercoming head became impacted. Attempts with forceps failed, and the child was delivered manually. Impaction was due to hydrocephalus.

The size of the head was enormous, even for a hydrocephalic fetus; its intact delivery bears testimony to the skill of the medical attendant. There was a double "hare lip," and a complete cleft palate. The right ear was malformed with an imperfect external meatus; the left ear was malformed with no external meatus; and an accessory auricle was present on the left side.

On examining the right eye (Fig. 1) there appeared to be a condition which looked very much like a defect in the sclera. On both sides of the cornea and on a level with the horizontal meridian there was an area as dark as the pupil, triangular in

shape, with the base adjoining the cornea. These areas merged imperceptibly into the pupillary area, so that the whole had the shape of a lozenge. The one on the temporal side of the cornea measured 4 mm. in a horizontal direction, and was slightly larger than the other on the nasal side. The conjunctiva was freely movable over these parts which did not show any bulging. In other respects the eye appeared to be normal, in particular its size seemed to be normal and there was no coloboma or other abnormality of the iris.

The left eye presented the same condition, but only on the temporal side. The left pupil was slightly larger than the right.



FIG. 2.

otherwise the eye looked normal. It should be added, that both in this and the other eye, the colour of the sclera was pearly white outside the areas described.

I excised the right eye, and Fig. 2. represents a section of it near the horizontal meridian, and parallel to it. It will be seen that there is a very great difference in thickness between the anterior and posterior portions of the sclera, the relative proportions of the former to the latter being about one to four. Along the ciliary muscle, the tenuity of the former is still more marked. The muscle lies in a hollow formed at the expense

of the sclera (Fig. 3), so that the latter becomes very thin indeed. Examination of serial sections revealed the fact, that the hollow disappears more and more, the greater the distance from the horizontal meridian, until at the upper or lower border of the triangular areas, it is comparatively slight. At the same time the ciliary muscle diminishes somewhat in thickness.

As regards the microscopic appearances the structures were normal. There was no evidence of inflammation. The cornea showed nothing pathological. The anterior and posterior elastic laminae were present, and the epithelium on their surfaces was normal.

The vertical sections, like the horizontal ones, showed a thin



FIG. 3.

sclera anteriorly. The disproportion, however, between the anterior and posterior parts was not so great, being about one to two.

The other parts of the eye, as lens, choroid, etc., were normal.

Remarks.—It is obvious that the appearance of the eyes was due to the sclera being so thin as to be transparent, allowing the ciliary muscle and uveal pigment to shine through; and the explanation of the situation of the triangular areas to my mind is this, that the condition is an exaggeration of a normal one. Workers in ophthalmic pathology know, that on each side of the cornea, the sclero-corneal junction is transparent for a fraction of an inch, sufficient to form a guide to the horizontal meridian.

The exaggeration is rendered possible by the thinning of the whole anterior segment of the eye, which in turn owes its origin to the nutritive disturbances, that have led to all the other abnormalities about the head.

The question naturally arises: Is the case a variety of buphthalmos?

Buphthalmos is now generally considered to be due to disease of the filtration angle which results in obstructing the escape of the intraocular fluids. It is a "disease." Here, however, there is no evidence of disease. The filtration angle is normal, and the changes commonly found in hydrophthalmos are conspicuous by their absence—*e.g.*, no distention of the eye, no deep anterior chamber, no degeneration and rupture of Bowman's membrane, no cupping of the disc, etc. This being so, and considering the character of all the other abnormalities about the nose, mouth, and ears, etc., there seems to me no reason to regard the case as other than purely developmental. It is therefore not a hydrophthalmos, but a condition *sui generis*.

As I have mentioned before, ophthalmic literature does not seem to contain a record of a similar case. There is no reference to such a one in *Græfe-Samisch* (2nd edition), *Parsons, Norris and Oliver, Archives of Ophthalmology, Revue d'Ophthalmologie, Annali di Ottalmologia, Transactions of the Ophthalmological Society*, or *THE OPHTHALMOSCOPE*.

I am indebted to my friend Dr. P. Mathews for drawing my attention to the case and for permitting me to excise and to examine one of the eyes.

THE PRESENT POSITION OF THE SPIROCHÆTA PALLIDA IN RELATION TO SYPHILITIC AFFECTIONS OF THE EYE.¹

BY

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Since the appearance of Schaudinn and Hoffmann's article barely two years ago (*Arbeiten aus dem Kaiserlichen Gesundheitsamts*,² Band XXII, Heft 2, April 10, 1905), announcing the

(¹) Read at the extra-metropolitan meeting of the Ophthalmological Society held at Edinburgh on May 25, 1907.

(²) For translation see *Journal of the Royal Society of Medicine and Allied Sciences*, London: New Sydenham Society, 1906.

discovery of a tiny, corkscrew-like organism, the *spirochaeta pallida*, in syphilis, upwards of seven hundred communications have been published on the subject. A few of these articles deal with the micro-organism as it occurs in lesions of the eye, produced experimentally or otherwise. A brief account of what has been done in this direction, together with a few suggestions as to what may be expected from the discovery so far as our specialty is concerned, may at this juncture not be altogether devoid of interest to members of the Society.

It is no part of my purpose to discuss the differentiae of the *spirochaeta pallida*, or, as it is now more correctly called, the *treponema pallidum* (Vuillemin). The organism in question, however, has been found in all forms and stages of syphilis, whether acquired or inherited, human or animal. It has also been demonstrated in the blood of patients affected with hereditary syphilis and of those passing through the secondary stage of the acquired disorder. On the other hand, the *treponema* has not yet been found in non-specific lesions, although often searched for under those circumstances. These points, along with the distribution of the organisms in consonance with the recognized facts of the histology of syphilitic lesions in general, justify us in according to the *treponema* a specific rôle as regards the causation of the disease.

The *treponema*, as everybody knows, has not yet been cultivated outside the animal body, and to that extent its specificity may be called into question. This omission will doubtless be overcome, especially as it is now known that syphilis may be inoculated not only in monkeys but also in rabbits. Under any circumstances, this gap in the evidence does not invalidate the general conclusion, namely, that the *spirochaeta pallida* is almost certainly the cause of syphilis.

After all, there is ample precedent for the assumption involved in the claim. Thus, the *spirillum Obermeiri* has for long been accepted as the cause of relapsing fever; Laveran's plasmodium as the specific cause of malaria; the *trypanosoma Gambiensi* as the cause of "sleeping sickness": yet in none of the cases quoted has the parasite concerned been cultivated outside the animal body. An even more conspicuous exception to Koch's second postulate is furnished by the *bacillus lepræ*, a micro-organism which can neither be inoculated in animals nor grown upon artificial media, and yet one which is universally recognized as the specific organism of leprosy. The causal relationship of the *treponema* to syphilis, therefore, is based upon stronger ground than that admitted to be adequate in the case of the organism of leprosy.

In short, we may provisionally conclude that in the

spirochaeta pallida we have the veritable specific element of syphilis.

It would be a truism to say that of all known causes of disease of the eye, syphilis ranks easily first. The diagnosis depends upon four main points: first, the patient's personal history; secondly, the situation and clinical characteristics of the disease; thirdly, the nature of the associated lesions; and, lastly, the results of treatment. In many instances, as we all know, diagnosis is obvious; but in others it is exactly the reverse. It is in the latter circumstances that the discovery of Schaudinn's organism may render invaluable help. The important part now assigned by many surgeons to tuberculosis in some diseases of the eye, once believed to be almost always of syphilitic origin—for example, interstitial keratitis and choroiditis—render the possession of some such means of differentiation most desirable. The reaction following the injection of tuberculin, from which great things were confidently expected, is now known to be of a somewhat untrustworthy description. That something more definite may be forthcoming from the finding of the treponema in the tissues and secretions of the eye must be the hope of everybody who is interested (and who is not?) in the more exact diagnosis of disease.

How far have we advanced in the desired direction? This question may be best answered by briefly analysing the results so far attained, which may be grouped under the following heads:—

1) The discovery of the treponema in the apparently healthy eyes of foetuses and of infants who have died from congenital syphilis.

(2) Its discovery in lesions set up experimentally in the eyes of animals by the inoculation of syphilitic material, such as chancres or diseased glands.

(3) Its discovery in actual syphilitic invasions of the human eye.

I.—Congenital Syphilis.

In no condition, perhaps, has the treponema been found with such constancy and in such numbers as in the bodies of foetuses or of babies who have succumbed to the syphilitic virus. The micro-parasite has been discovered, not only in the actual specific lesions themselves, notably in pemphigus neonatorum, but also in tissues and viscera, including the blood, which manifested no changes to the naked eye. For example, they have been found in the placenta, the umbilical cord, the liver, the lymphatic glands, the lungs, the supra-renal capsules, the

bronchial tubes, the spleen, the kidneys, the pancreas, the thyroid body, the thymus, the walls of the intestine, the meconium, and the testicles. In view of the statement by Friedenthal (*Berl. klin. Wochenschrift*, September 10, 1906), that the so-called spirochaetes in these and other cases merely represent artefacts, such as filaments of fibrin or of chromatin, or degenerated nerve-fibrils, or connective tissue fibres, it is important to recall the fact that the organism has been demonstrated in the blood, both of syphilitic fetuses and of living syphilitic infants, in the former case by Babes and Panca, and in the latter by Jadassohn.

According to Axenfeld (*Die Bakteriologie in der Augenheilkunde*, 1907, p. 320), spirochaetes have been demonstrated in the cornea of newly-born or premature syphilitic babies by Stock, Peters, and Römer. Hans Bab (*Deutsche med. Wochenschrift*, November 29, 1906, p. 1,945) has recently published an important communication dealing with this subject. He succeeded in finding spirochaetes in the eyes of three specific still-born babies. Preparations were stained by the Levaditi silver method, and the spirochaetes were found in large numbers in practically all the ocular tissues, except the vitreous humour and the crystalline lens. They were especially abundant in the choroid. In one instance they were demonstrated in the retina, optic nerve, and extrinsic muscles of the eye. The pictures which accompany Bab's communication show clearly the distribution of the organisms in the tissues of the eye. In a case examined by myself, large numbers of the treponema were found in almost every part of the eyeball, especially in the choroid and ciliary body, where they appeared to bear a close relationship to the blood-vessels. The specimen was derived from a syphilitic baby who died a few hours after birth.

2.—Experimental Syphilis.

The eyes of both monkeys and of rabbits have been successfully inoculated with syphilitic material from man, and the resulting lesions have been examined histologically and bacteriologically. Indeed, prior to the discovery of the treponema, P. Salmon (ref. in *Archives d'ophtalmologie*, avril, 1905, p. 1,263) observed iritis and keratitis thirty-three days after a monkey had been inoculated with a syphilitic papule from man. The histological appearances fully confirmed the diagnosis of ocular syphilis.

Schulze (*Klin. Monatsbl. f. Augenheilkunde*, September, 1905) first injured and then rubbed syphilitic material into the iris of twenty-six rabbits. In the lesions thereby produced an organism,

called by its discoverer, Siegel, the cytorrhynes luis,* was found. Whether this flagellate protozoon, as suggested by Schütz (*Münch. med. Wochenschrift*, March 20 and April 3, 1906), represents a phase in the developmental life-cycle of the spirochæta pallida, is not yet certainly proved. The fact is, however, suggestive that monkeys inoculated with particles of iris from the rabbits employed in Schulze's experiments, developed constitutional syphilis, associated with cytorrhynes in the organs.

Bertarelli (*Presse Médical*, août 22, 1906) obtained a positive result by inoculating the cornea of rabbits with an emulsion made from human chancres. The affected corneæ showed numerous spirochætes, and, in addition, a marked leucocytic infiltration, which extended into the seemingly unaffected parts of the membrane. Spirochætes were not found in the iris. The histological changes, which included proliferation of the endothelium of the vessels, together with perivascular infiltration with leucocytes, recalled those of an ordinary syphilitic chancre.

Scherber and v. Benedek (*Münch. med. Wochenschrift*, June 14, 1906) inoculated the anterior chamber of rabbits with the virus of chancres, syphilitic glands, and specific papules. In the course of two or three weeks, greyish-red nodules developed near the pupillary edge of the iris, and in the sixth week, interstitial keratitis, without pronounced inflammatory accompaniments, was observed. The inoculation of the supra-orbital region of a monkey with bits of tissue taken from an experimental rabbit was followed four weeks later by a localised infiltration of copper hue.

Most suggestive experiments were those reported by Greeff and Clausen at the last meeting of the Heidelberg Ophthalmological Society (*Ber. der Oph. Gesellsch., Heidelberg*, 1906, p. 314). The authors named had inoculated the eyes of apes and of rabbits with syphilitic material, and, after the lapse of some weeks, had observed the development of a kind of interstitial keratitis. In the early cases spirochætes could be demonstrated in numbers, but they could not be found in the more advanced cases. Greeff and Clausen surmise that the corneal opacity is the outcome of a leucocytic infiltration, which attacks, and eventually destroys, the microparasites. In a second communication (*Deutsche med. Wochenschrift*, September 6, 1906) they point out that in order to demonstrate the spirochætes, it is necessary, owing to the anatomical arrangement of the lymph canals, to make sections longitudinally, and not transversely, through the cornea.

*It was in consequence of the discovery of this organism that Schaudinn was commissioned by the Imperial Board of Health in Berlin to study the question of the ætiology of syphilis (see Thesing: *Münch. med. Wochenschrift*, July 11, 1905).

Schucht (*Münch. med. Wochenschrift*, 1907, p. 110), nineteen to forty-three days after inoculation of the cornea and anterior chamber, observed an interstitial keratitis, in sections from which spirochaetes were found. Lastly, Róna's experiments on rabbits (ref. in *Woch. f. Ther. u. Hygiene des Auges*, April 11, 1907) determined the access of irido-cyclitis and of interstitial keratitis with numerous spirochaetes.

3.—Clinical Syphilis.

The discovery of Schaudinn's organism in actual syphilitic invasions of the human eye has seldom been reported, probably because it has not yet been often searched for. I know, in fact, of only four positive observations, namely, those of Kowalewski, zur Nedden, Kruckmann, and myself.

At a meeting of the Berlin Ophthalmological Society on November 16th, 1905, Kowalewski (*Klin. Monatsbl. f. Augenheilkunde*, 1905, Band II, p. 489) demonstrated the spirochaeta pallida, along with other organisms, in a primary syphilitic sore of the eyelid.

zur Nedden (*Bericht der Ophthal. Gesellschaft, Heidelberg*, 1906, p. 215) succeeded in finding the spirochaeta pallida in the aqueous humour from a case of acute syphilitic iritis. zur Nedden therefore believed that cases of specific iritis could be diagnosed by the bacteriological examination of fluid from the anterior chamber. This conclusion is personally somewhat gratifying to me, inasmuch as eleven years ago I ventured to predict (*Lancet*, February 29th, 1896) that the bacteriological investigation of the aqueous humour might lead to a correct conclusion with regard to the cause of doubtful cases of irido-cyclitis. In this connection the fact may be recalled that Gourfein (*Rev. Méd. de la Suisse Romande*, April 20th, 1903) adopted the plan twice with success in cases of tuberculosis of the iris. He determined the virulence and specificity of the fluid—first, by the inoculation of rabbits, and, secondly, by the making of cultures on potato media.

Personally, I have once found the treponema in the aqueous humour of a woman of twenty years, affected with acute irido-cyclitis in the course of early secondary syphilis (untreated). An induration, representing the initial sclerosis, was present on the left labium majus. The operation of paracentesis, whereby the aqueous was obtained for examination, did nothing but good.

Indeed, the time seems to be approaching when the bacteriological examination of the aqueous humour will become a practical means of diagnosis in some of the obscure diseases of the uveal tract. Tubercle and syphilis, as we have

seen, may be recognised by that means, and there is a likelihood that the diplococcus rheumaticus of Poynton and Paine might also be found if it were looked for. In that event, we should possess a means of differentiating between the three main causes of inflammation of the tunica vasculosa—namely, syphilis, tubercle, and rheumatism. It will be remembered that Poynton (*THE OPHTHALMOSCOPE*, October, 1903) twice succeeded in setting up experimental irido-cyclitis by injecting the micrococcus rheumaticus into the auricular vein of rabbits. The anterior chamber contained leucocytes which teemed with the diplococcus, a culture of which when injected into another rabbit, produced a chronic arthritis.

Kruckmann (quoted by Axenfeld, *loco citato*, p. 320) found spirochætes in recent papules of the iris.

The treponema pallidum (or an organism morphologically indistinguishable from it) has been found by me in two cases of keratomalacia in syphilitic infants, aged respectively seven weeks and nine months. Under a general anæsthetic, material was scraped from the diseased cornea in each instance, smeared on cover-glasses, air-dried, and stained by Giemsa's method. Each of the specimens examined showed a limited number of corkscrew-like protozoons, stained of a rose colour, and having from six to sixteen twists. The observation was confirmed by Dr. W. A. Milligan, pathologist to the North-Eastern Hospital for Children, London. Brief particulars of these two cases were published in *THE OPHTHALMOSCOPE* of March last.

To them I am now in a position to add a third case of keratomalacia in an infant of three months, where the syphilitic nature of the diseased process was not of an altogether convincing character, apart from the bacteriological findings. It included merely athrepsia, coryza, slight enlargement of the liver and spleen, and a few small ulcerated papules about the anus. Both corneæ were practically destroyed and the eyes in a condition of incipient panophthalmitis when the infant was seen by me. Accordingly, the circumstances were not altogether propitious for the discovery of the treponema. That organism was, nevertheless, found in scrapings from the affected corneæ. A microscopical field could seldom be examined without coming across one or more of the micro-organisms. In the light of the first two cases the discovery of the spirochæta in the third case stamped the latter as of syphilitic origin, despite the somewhat slender evidence derived from the clinical investigation.

To the negative results reported by some authors as by Sauvigneau in chancre of the ocular conjunctiva (*Annales d'oculistique*, May, 1906), and by Feilchenfeld in syphilitic tarsitis (*Arch. für Augenheilkunde*, December, 1906), undue

importance will not be attached by those who are in the habit of weighing evidence, medical or otherwise.

CONCLUSION.

In conclusion, it has been shown, then, that the *treponema pallidum* can be found in the non-inflamed eyes of fetuses and of infants suffering from congenital syphilis; that inoculation of the eyes of monkeys and rabbits with syphilitic material may produce lesions of the cornea and iris which are like those seen in man affected with ocular syphilis; and, lastly, that spirochaetes have been demonstrated in syphilitic irido-cyclitis and keratomalacia. The conclusion is inevitable that in the discovery of Schaudinn's organism we have the strongest possible proof of the syphilitic nature of any given disease of the eye.

The recognition of the fact that the *treponema* occurs in specific lesions of the eye is bound to widen our conception of the pathological processes characteristic of syphilis. It has already suggested an explanation of certain points that were more or less shrouded in mystery. Thus, the existence of spirochaetes in the cornea, iris, and choroid of syphilitic infants gives us a hint as to the mechanism whereby interstitial keratitis, iritis, and choroiditis may be brought about later in life. Although most of the protozoons may succumb to the natural defensive powers of the body, yet some may remain latent, perhaps in a resting stage, like the trypanosome, until roused into renewed life and activity by an exciting cause, possibly years after the original invasion. On this theory it becomes comparatively easy to understand why in predisposed subjects local injury is so common an exciting cause of interstitial keratitis, and why a history of traumatism is far from unknown in choroiditis in those who have acquired or inherited syphilis. The persistence of a few spirochaetes, whilst most had undergone destruction, would explain the relapses now and then observed in cases of interstitial keratitis, and similar considerations would account for the recurrences not infrequent in syphilitic choroiditis.

As our knowledge of the *treponema* grows, the finding of that protozoon in diseases of the eye must, I think, assume the same diagnostic importance as is now universally attached to the discovery of the tubercle bacillus or of some other micro-parasites, the specificity of which has passed far beyond the realm of mere academic discussion.

CLINICAL, PATHOLOGICAL, AND THERAPEUTICAL MEMORANDA.

ANTE-PARTUM OPHTHALMIA: THREE CASES.

BY

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A brief account of three cases of ante-partum ophthalmia, observed at the British Lying-In Hospital, London, during the last few years, may possibly interest readers of THE OPHTHALMOSCOPE. The facts are as follows:—

Case No. 1.—The mother, a primipara, 21 years of age, was admitted on September 13th, 1904, in the first stage of labour, the os uteri admitting the tip of the finger. On admission, a yellow vaginal discharge was present, and so the woman was douched with sublimate, 1 in 2,000, before delivery. The membranes ruptured at the commencement of the second stage, which lasted just fifteen minutes. The baby was small, badly-nourished, and weighed 5 lbs. 2 ozs. The upper lids were noticed to be red and swollen at birth, and the baby made no attempt to open them. A single drop of silver nitrate (2%) was instilled into each eye. Twelve hours later the upper lids were the size of walnuts, and a watery yellow discharge was running away from the eyes constantly. No eyeball could be seen, owing to the swelling of the palpebræ. The conjunctiva presented a granulated aspect. The next day, thick pus welled up from between the lids whenever they were separated. The baby was taken for advice to the Royal London Ophthalmic Hospital within twenty-four hours of birth. The corneæ did not become affected. The baby was well enough to leave the hospital on September 25th, 1904.

Case No. 2.—The mother, a primipara, 20 years of age, of low social class, was admitted on April 13th, 1905. The membranes ruptured when the second stage of labour, which lasted $1\frac{1}{4}$ hours, commenced. The eyelids were red and swollen at birth, and the baby made no attempt to open them. Eight hours after birth, yellow watery fluid was observed to ooze from between the lids. The eyes were treated with silver nitrate, 2 per cent., and cold boric pads were applied to the lids. Fifteen hours later—*i.e.*, 23 hours after birth—the upper lids were shiny and so tense that there was difficulty in seeing the eyeballs when they were drawn apart. At this stage the baby was taken for advice

to the Royal London Ophthalmic Hospital. The infant, with its mother, left the British Lying-in Hospital on April 25th, 1905.

Case No. 3.—The mother, a primipara, 21 years of age, admitted well advanced in the second stage of labour, the membranes having ruptured prior to reception at the hospital. Although yellow discharge from the vagina was noticed, there was no time to apply the douche, since the woman was delivered about ten minutes after admission. At birth, the baby's eyelids were rather swollen, but not red. Granulations under the upper lids, however, were noticed immediately after birth. The conjunctiva was painted with silver nitrate, 2 per cent., and cold iced compresses were applied to the lids. On the next day the eyes were watery, and a good deal of inflammation was present. The child, who was constantly crying, appeared to be suffering much. When twenty-four hours' old the infant was taken to King's College Hospital. After eight days' treatment at that institution, the granulations had almost disappeared, and the child opened its eyes naturally.

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A NEW INSTRUMENT FOR MEASURING THE INTEROCULAR DISTANCE.

BY

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The method most generally employed for taking the measurement of the interocular distance by means of a graduated rule is not entirely free from objection. The rule has to rest against the patient's face, either directly or indirectly. Moreover, the observer's eyes must be closed in turn. During the interval between their closure and the completion of the two measurements some lateral motion of one of the two heads is apt to take place.

The thought has frequently occurred to me that some instrument on the principle of the sextant might be constructed, to enable both eyes to be kept in view at the same moment, and to avoid any unpleasant proximity to the patient. The necessity, however, of having to know the distance from the patient at which the sextant is used introduced too troublesome a complication to permit the idea to be practicable.

As often happens, the solution of the difficulty proved simpler than was at first expected. It was found by converting

the angular motion of the sextant into rectilinear motion, enabling the instrument to effect its measurements irrespective of its distance from the two objects the separation of which it determines.

The sextant thus modified I have thought of calling a "duant." It is shown in its simplest form in Fig. 1. In another pattern the distance between the mirrors is regulated by means of a screw.

As shown in the figure, two narrow strips of metal, preferably of magnalium or aluminium, are held in a horizontal plane by one hand so that one readily glides over the other lengthwise and in close contact. The left extremity of each strip is turned upwards 90° in elevation, along a line which is 45° in plan, so as to support a mirror set at an angle of 45° to the length of each strip. Fig. 2 shows these mirrors in plan. They are parallel to and facing each other, the left mirror having a greater vertical dimension than the right.

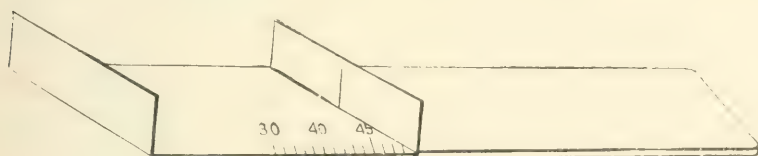


Fig. 1.

The instrument is held transversely by the observer between himself and the patient, so that the left eye of the latter is just visible over the top of the right-hand mirror. The lower strip of metal is then slipped by the thumb until the patient's right eye is seen immediately below the left after double reflection from the mirrors. If used as an interpupillometer, the lower half of one pupil can be fitted against the upper half of the other by a trained hand, so as to form one circle. If used as an interaximeter, the patient should direct his attention to some bright object, such as the illuminated test types or any distant source of light, above the observer's head, while the instrument brings one corneal reflection under the other.

One precaution is essential to the use of the instrument: it should be held strictly at right angles to the observer's visual line.

To secure this, each mirror is furnished with a spot or line in its centre. When these two markings appear to coincide, the instrument is held truly.

The mirrors should not be allowed to lose their brightness, since double reflection implies a little loss of light, which becomes of consequence if they are not kept clean.

With a good instrument the interocular distance can be measured at a considerable distance from the patient—indeed, at some yards, in an appropriate light. It is needless to add that the position of the observer should not be such as to allow window light or luminous objects to be reflected into his own eye from the mirrors.

This being an instrument of precision, the accuracy of each specimen should be tested before purchase, and it only remains to describe a simple way of doing so.

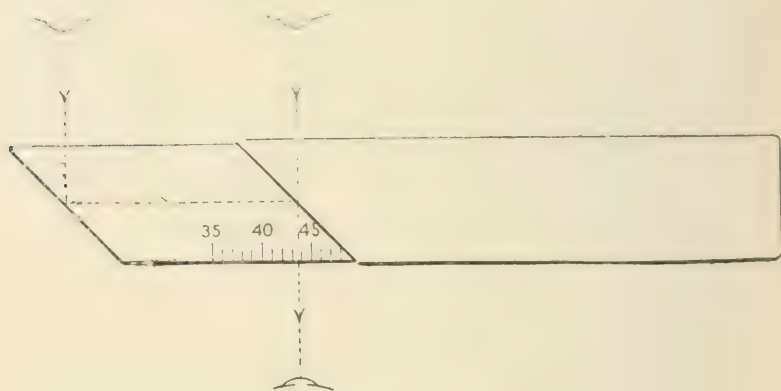


Fig. 2.

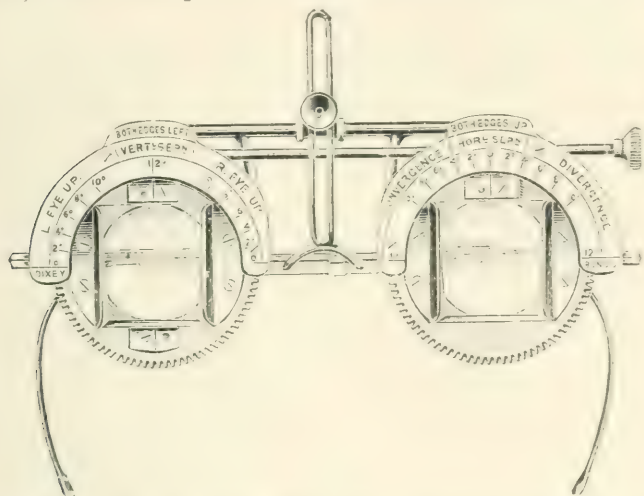
Make two dots on a piece of paper, about $2\frac{1}{2}$ inches apart, and measure the distance between them with the instrument as close to the paper as possible. Thereupon make a second measurement at some distance from the paper. If the measurements agree with each other and with the actual distance between the dots, the instrument is accurate.

NOVELTIES.

THE PRISM VERGER.

This is an instrument which has been designed by Dr. E. E. Maddox, and which is intended for the measurement and enlargement of fusion power. As the illustration shows, it consists of an adjustable spectacle frame in which two prisms are simultaneously rotated in opposite directions, by means of a milled head. One of the prisms is reversible in its fitting, and this contrivance allows vertical, as well as horizontal, separation

to be effected. It is suggested that, besides its use as a measure of the fusion power of the eyes, it is well adapted for training the muscles by exercise. In conjunction with a Maddox rod, it will estimate departure from the static balance of the ocular muscles; and if one prism be removed, and the other set with



its base up, it may be used with the Maddox tangent chart to estimate the latent excess or insufficiency of convergence at a reading distance.

Messrs. Dixey & Son, of 3, New Bond Street, and 20 Welbeck Street, London, W., are the makers of this ingenious instrument.

CURRENT LITERATURE.

NOTE.—Communications of which the titles only are given either contain nothing new or else do not lend themselves to abstract.

I.—THE CRYSTALLINE LENS, NORMAL AND PATHOLOGICAL.

- (1) Toulfesco.—On the pathological lens. (*Sur le cristallin pathologique.* *Ann. d'oculistique*, CXXXVI, p. 1, juillet, 1906.
- (2) Toulfesco.—On the normal lens. (*Sur le cristallin normal.*) *Ann. d'oculistique*, T. CXXXVI, p. 104, août, 1906.

- (3) Römer, Paul.—The pathogenesis of senile cataract, from the standpoint of serum research. Part 3, 4, 5, and 6. (Die Pathogenese der Cataracta senilis vom Standpunkt der Serumforschung. *Arch. f. Augenheilk.*, Supplement to Vol. LVI, 1907.

(1) After a brief historical *resumé* of the anatomical changes recorded by various authors as occurring in cataract, Mdle. **Toufesco** describes the appearances seen by her in a number of cataractous lenses treated with eclectic stains for fat (Sudan III, etc.) and with osmic acid. The specimens examined comprised 45 senile, 1 juvenile, 2 soft, 1 black, and 2 naphthalin cataracts, the latter experimentally produced in rabbits. Smear preparations (*frottis*) were made of the soft cataracts which showed numerous fatty globules, which stained orange-red when treated with Sudan III. Some of these specimens were further treated with: 1. Ether, etc., when the fat drops could be seen, under the microscope, to dissolve. 2. Osmic acid, when some of the fat drops turned black or grey, while the colour of others remained unaltered. Comparing the action of osmic acid and Sudan III, the fats which stained best with the latter were those which turned blackest when treated with the former. As it is known that when treated with osmic acid, the behaviour of different fats varies, the liquid ones turning rapidly black and the solid ones and lecithins being coloured more or less grey, while there are some which are not stained at all; this shows that the degeneration of the lens gives rise to fats of various kinds.

In the senile cataracts similar fatty degenerations were found in the fibres and in the fissures (*fentes*) between them, while the peripheral fibres were often fused into a homogenous mass, coloured grey brown by osmic acid, and containing roundish vacuoles which were filled with fat cells, when care was taken to avoid the use of fat solvents in treating the preparation. In other cases, both the periphery and the nuclei were fused into homogenous masses, traces of fibres remaining in the perinuclear zone alone. While this fusion of the fibres remained incomplete, the periphery and nucleus stained black with osmic acid, and the perinuclear zone remained grey. With Sudan III the nuclear fibres always coloured less than the peripheral ones, which formed a red border and were dissociated into fibrils, between which were numerous fatty globules. In one specimen a mass of pigment, resembling choroidal pigment, was found between the superficial peripheral fibres and the perinuclear masses.

In the black cataract the whole lens consisted of thick fibres with closely fimbriated edges, united to each other by numerous anastomoses. Detritus and globules were absent, and with

Sudan III the border alone stained uniformly red, the rest of the section being of a quite uniform rose-brown colour.

Three pieces of capsule removed, one during an extraction, and two in operations for after-cataract, were also examined with fat stains. Their epithelium appeared normal.

From her study Toufesco draws the following conclusions. In every cataract the appreciable degenerative changes commence at the equator, but their first cause seems to be an alteration of the large central cells of the capsule. The degenerative processes seem to be the same in all classes of cataract, congenital and acquired (with the possible exception of black cataract) but they are seen at different stages of their evolution. One of them is fatty degeneration of the lens fibres.

A full description of the various methods employed in making the preparations is given in the article, which is illustrated by an excellent plate containing nine colored figures. R. J. C.

(2) **Mdlle. Toufesco**, after a brief reference to some known points with regard to the anatomy of the crystalline system, gives an account of an investigation which she has made on the embryology and comparative anatomy of the suspensory ligament and the capsule of the lens. From these she forms the following conclusions: (1) *Suspensory ligament*.—Comparative anatomy clearly shows this to be of mesodermic origin. Its development seems to occur early and to correspond with that of the vascular system of the eye. Its fibres seem to pass through the ciliary body to join with the elastic network which covers the ciliary muscle, and there seems to be a relationship between their strength and arrangement and the development of the ciliary muscle. At the surface of the lens its fibres become attached to the walls of the capillary vessels of the embryonic vascular tunic of the lens, and in the adult a network of fibres seems to persist surrounding the lens on all sides. (2) *Lens capsule*.—Three kinds of cells are met with on the anterior capsule: (a) large clear central cells with inter-cellular bridges, which seem to play a fundamental rôle in the nutrition of the lens; (b) small active peripheral cells with numerous long prolongations, which seem to be charged with the defence of the lens against exterior influences; (c) equatorial cells disposed in meridional series, which form fibres and seem to be charged with the regeneration of the lens. These varieties represent the three stages of the evolution of the lens-cell. R.J.C.

(3) **Römer** reports on further investigations into the ætiology of senile cataract. The present papers deal with the following subjects:—

3. The physiological variations in the osmotic pressure of the intraocular fluids, and their relations to the osmotic pressure of the blood-serum.

4. The effects of poisons on the lens.
5. Experiments concerning sero-diagnostic reactions in senile cataract.
6. Researches on the absorption of anti-bodies by the lens. The permeability of the lens capsule for components of the serum hæmolysins.

The idea underlying Romer's investigations is that senile cataract may conceivably be caused by cytotoxins. Since Peters and others had attributed cataract to disturbances in the intraocular osmotic pressure, it became necessary to answer the question whether the deviations from the normal proportion of salts in the intraocular fluids were so great that they might be regarded as the sole or accessory cause of the disintegration of the healthy lens. He found, first of all, that the intraocular osmotic pressure did not rise or fall independently of the osmotic pressure of the blood; secondly, that the physiological variations were considerable; thirdly, that it was almost impossible to increase abnormally the osmotic pressure of the blood of a warm-blooded animal; and, fourthly, that when it was raised in the cold-blooded animal (frog) to 1-1½ times the normal, no cataract was formed. He concludes, therefore, that cataract cannot be due to such a simple process as a change in osmotic pressure.

The author next considered that if senile cataract was due to the action of toxins upon the living cells of the lens, then the substances concerned would be most likely such as existed, or were produced, in the system as a result of metabolism, and that serum research might throw some light on the matter. Previous investigations had demonstrated the presence of receptors in the lens (Róma), and that lens albumin was precipitated by the serum of rabbits treated with lens albumin (precipitin reaction, Uhlenhuth).

In proceeding further along these lines, the author experimented with saponin and tetanolysin, as being representatives of chemically defined and undefined bodies respectively. He sought to determine to which of these two groups the poison causing cataract was more likely to belong. Both acted chemically, but the latter only entered into the constitution of the cell. Saponin had been shown to attack blood corpuscles by way of the cholesterol molecule, and Leber had suggested, that the lipid substances of the lens (lecithin, cholesterolin) might be responsible for absorbing products of metabolism detrimental in their effects upon the lens. Tetanolysin again, was the first poison for which the lens had shown specific affinities. The protoplasm of the lens combines with it, in the same way as the anti-toxin of diphtheria combines with the toxin and neutralizes

it; there is present an anti-tetanolysin (Römer). The experiments with saponin and tetanolysin produced the following results: Saponin leads to cloudiness and detachment of the anterior epithelium of the lens, tetanolysin causes no macroscopic changes, though much more of it is absorbed. In the former case the lens loses a large amount of albumin and takes up a considerable quantity of water, whereas in the second case, very little albumin is lost and almost no water taken up. The author concludes, there can be no doubt, the effects of tetanolysin more closely resemble those of the supposed cytotoxins. Further experiments with chloroform, carbolic acid and acetone confirm the view, that the soluble lipid substances cannot act in such a way as to explain the formation of cataract.

In the next part of his paper the author raises the question: Can we diagnose cataract by examining the blood serum? He says, "if the retrogressive changes of advancing age stand in any casual relationship to the development of cataract, we must try to solve the following problems: whether any substances appear in the blood, which are specifically directed against the lens, or whether there is only a change in the proportionate quantities of such substances, or finally, whether the constitution of the serum in the presence of cataract is the same as in the normal individual." He found that he could profoundly alter the properties of the serum by introducing lens protoplasm, *e.g.* normal calf serum agglutinates the blood corpuscles of the rabbit, whereas serum of a calf immunised with ox lenses does not. But lens immunisation does not lead to hæmolysins being formed, so that in this respect lens cells differ from blood corpuscles, ciliated epithelium, mammary cells, etc. What are the cytotoxins produced, if any, and how do they differ from others?

On hearing of the discovery of the phenomenon known as the "deviation of complements," the author immediately set about applying this delicate test in his experiments. (When a trace of serum with its homologous anti-serum is added to a mixture of "sensitised" corpuscles and complement, the phenomenon called deviation of complement occurs, and as a result, there is no hæmolysis. The complement, which, in an ordinary hæmolytic experiment, would have become attached to the sensitised corpuscles and so produced hæmolysis is, under the above conditions, absorbed by the product formed by the union of the serum with its ante-serum.) If it applied to the lens, then, he argued, he would be able to diagnose lens albumin as such. He would be in a position to ascertain whether the albumin in the anterior chamber of an eye with cataract was lens albumin, whether anti-lens bodies were present in the serum of immunised animals, and in normal serum. He found, that

100,000 part of a lens prevented hæmolysis in a mixture containing lens antiserum from the rabbit + guinea pig complement + ox corpuscles (amboceptor, rabbit + ox blood). As a control, he found that hæmolysis took place if either the lens or the lens-antiserum was left out. Lens albumin therefore was a specific substance, and a means was discovered of detecting lens albumin whenever it escaped from the lens, and proof was obtained, that the serum of animals immunised against lens albumin contained anti-lens bodies. He also observed that normal serum contained anti-lens bodies, for normal calf serum or human serum added to lens albumin caused deviation of complement. He did not detect them in the new-born child. He did not find them present in greater quantities in persons suffering from cataract, than in normal persons.

Finally, the author shows that the lens capsule is permeable for substances in the serum which may be cytotoxic, and, also, that of these substances the lens cells are able to take up only such, for which they possess specific receptors, behaving in this respect, therefore, like other cells.

PERCIVAL J. HAY.

II.—VISUAL FIELDS IN LESIONS OF THE OPTIC SYSTEM.

Russel, Colin.—The vision fields in cases of indirect or incomplete lesions of the optic system. *Journal of Nervous and Mental Diseases*, December, 1906.

This article is concerned with the varying effects on vision produced by lesions in different parts of the optic system. Certain anatomical questions are discussed first, **Russel's** conclusions being as follows.—The macular fibres run on the temporal side of the optic nerve. The direct fibres, both macular and peripheral, form two bundles on the dorsal and neutral side of the corresponding crossed fibres. The macular bundle retains its individuality fairly well till the geniculate body is reached. The external geniculate body is far more important for vision in man than the pulvinar of the optic thalamus or the anterior quadrigeminate body, and the latter two structures may be destroyed without the production of hemianopia. The centre of vision is in the margins of the calcarine fissure, though a higher visuo-psychic centre may extend from this widely on both the median and external surfaces, reaching even to the angular gyrus. The upper lip of a calcarine fissure is related to the upper homonymous quadrants of the retina and the lower lip to

the lower homonymous quadrants. The spreading out of the macular fibres as they proceed backwards explains why loss of visual acuity is not a prominent symptom of a posterior lesion. The following six cases, observed at the National Hospital, Queen's Square, London, are then described :

I. *Optic nerve lesion*.—Male, aged 36, suffering for five years from failure in vision, and for nine months from left-sided fits. Complete anosmia right side. Vision $\frac{6}{60}$ in right eye, and $\frac{6}{6}$ in left. Right pupil reacted to light poorly. Some atrophy of right disc. Central scotoma on right side, larger for red and green than for white, the colour scotoma extending to the nasal field. *Diagnosis*: tumour pressing on temporal side of optic nerve injuring the delicate macular fibres, and especially colour vision.

II. *Chiasma lesion*.—Male, aged 26. Acuity, left $\frac{6}{36}$, right nil. Discs pale and opaque. Bitemporal hemianopia involving the fixation point of the right field.

III. *Chiasma lesion*.—Male, aged 45. Acuity, right $\frac{6}{36}$, left nil. Double optic atrophy. Bitemporal hemianopia. Complete third nerve paralysis on the left side. In both this and the last case a pituitary tumour was removed by Sir Victor Horsley; in both cases it extended more to one side than the other.

IV. *Pressure on the right optic nerve, chiasma, and tract*.—Male, aged 37. Acuity, right $\frac{3}{60}$, left $\frac{6}{60}$. Sub-acute optic neuritis, left homonymous hemianopia. Tumour verified *post mortem*.

V. *Incomplete lesions of the optic radiations*.—Male, aged 37. Repeated epileptic attacks, vision being lost in certain parts of the field. Left upper quadriopia. Cystic tumour of right cuneus removed at operation.

VI. *Incomplete lesion of the optic radiations*.—Male, aged 39. After removal of a superficial tumour from the left supramarginal region patient developed right and incomplete hemianopia.

ERNEST JONES.

III.—SYPHILITIC RETINO-CHOROIDITIS.

Hirschberg, J. and Fehr, O.—Late results of syphilitic retino-choroiditis. (Die späteren Wandlungen der spezifischen Netz-Aderhaut-Entzündung.) *Centralbl. f. prak. Augenheilk.*, Oktober, 1900.

Hirschberg and Fehr report and give drawings of three cases of syphilitic retino-choroiditis, which had been seen at intervals for many years, and which illustrate three different results.

The first case was that of a woman, first seen in 1887, then aged 57 years, who had acquired syphilis in the preceding year. Vision began to fail shortly after, and when examined the patient was almost blind from vitreous opacities and retinitis. She improved under treatment; suffered a relapse; was again almost entirely cured by treatment; and then was not seen again for nearly 18 years, when she returned again almost blind with extensive choroiditis and vitreous opacities and arteries extremely thin and sclerosed, and pallor of the disc—a picture resembling a retinitis pigmentosa, except that there was considerable pigmentary disturbance around the disc. Treatment with mercury inunctions was again resorted to, and again there was considerable improvement—V. = 5/20 and an extension of the field of vision.

The second case was that of a man, first seen in 1872, then aged 22 years, when he acquired syphilis. He soon noticed failure of vision in the right eye, and when examined, was found to have a retino-choroiditis, with blurring of the disc and vitreous opacities. V. = fingers at 1m. This cleared up under treatment, and the eye became quite well. He was not seen again for 32 years, and although no further treatment had ever been carried out, the right eye was perfectly healthy and enjoyed excellent vision, and practically had nothing to show that it had ever been diseased. The left eye had always been well.

The third case was that of a man, first seen in 1874, then 44 years of age, who four years previously had acquired syphilis, and soon afterwards noticed diminution of vision in both eyes. When first seen V. = 1/50. Under treatment, this rapidly improved, the left eye becoming quite well. Patient was very careless about treatment, and showed himself only at rare intervals. He had many relapses in the right eye, and finally now, 21 years after its commencement, the right eye is practically blind with extensive choroidal change, while the left eye, which was cured by the first course of treatment, has normal vision, and full field, and extremely slight changes in the fundus.

A. LEVY.

IV.—PATHOLOGICAL ANATOMY OF THE ARGYLL ROBERTSON PUPIL.

Bach, L.—The pathological anatomy of the Argyll Robertson pupil. *Die pathologische Anatomie der reflektorischen Pupillenstarre.* *Zeitschrift f. Augenheilk.*, Juni, 1906.

Bach discusses the recent work on, and theories of, this subject, and describes his own experiments. He comes to no definite conclusion, but states that:—

(1) Probably the central grey matter, the corpora quadrigemina and oculomotor centres, have nothing to do with the production of the Argyll Robertson pupil reflex.

(2) Affections of the superior brachium may apparently cause reflex fixity of the pupil, and it would not seem to be necessary for all the fibres to be affected, but it is not improbable that a partial degeneration of the superior brachium, as well as the path from the corpora quadrigemina to the medulla, does occur in these cases.

(3) Usually the oculomotor nerve, and the ciliary ganglion and nerves remain unaffected, and have, therefore, probably nothing to do with the causation of the Argyll Robertson pupil.

(4) In those cases not complicated by visual disturbance the optic nerve is found normal.

(5) The investigations of the spinal cord, especially in the cervical region, have given very contradictory results and therefore no conclusions can be drawn from them.

For future investigators he advises that special attention should be paid to the medulla and the paths from the medulla to the corpora quadrigemina, and also the tracts from the spinal cord to the cerebrum, and from the cerebrum to the medulla.

A. LEVY.

V.—VESICULAR AND BULLOUS KERATITIS

Wirths, M.—Contributions to the anatomy of vesicular and bullous keratitis. (*Beiträge zur Anatomie der Keratitis vesiculosa und bullosa.*) *Zeitschrift f. Augenheilk.*, August, 1906.

Wirths describes the pathology of two eyes which had been removed on account of absolute glaucoma, both of which were the seat of bullous keratitis at the time of enucleation. In both cases he found the vesicles situated in front of Bowman's membrane, between it and the epithelium, which had been raised by the fluid from off the membrane. The outer wall, in addition, was formed by an adventitious membrane, which was probably coagulated albuminous matter. His view of the origin of these vesicles is that œdema fluids find their way into the cornea, and pass through Bowman's

membrane by means of the nerve catalyst, and then separate the epithelium from the membrane; small vesicles fuse to form the large bullæ, and the coagulation of the albumen in this œdema fluid forms the adventitious layer.

A. LEVY.

VI. TRANSPLANTATION OF THE CORNEA.

Zirm, Eduard — A successful total keratoplastic operation.
 Ein erfolgreiche totale Keratoplastik. v. Graefe's
Archiv. f. Ophthalmologie, 64. Band, 3. Heft, October 15,
 1906, and *Wien. klin. Wochenschrift*, Januar 17, 1907.

Zirm transplanted the cornea of both eyes in a man, 45 years of age, on account of complete leucoma following lime burns. The patient could only distinguish light from darkness. The operation proved completely successful in one eye, the flap retaining its transparency after eight months and allowing of a vision of $\frac{3}{20}$. The grafted material was taken from a boy of 11 years, whose eyeball had to be excised on account of traumatism. Zirm considers it very desirable to graft only healthy human material, because atrophic eyeballs, even if retaining a clear cornea, give unsatisfactory results. The principal reason for failure is, Zirm thinks, insufficient nourishment of the flap, due to unsatisfactory circulation in the cicatricial tissue into which the flap is implanted; cases where the cornea still retains a trace of its original structure are, even if quite opaque, therefore, the most promising ones. Thus, leucoma corneæ, old pannus, and interstitial keratitis are most suitable cases for total transplantation, while staphyloma and other results of suppuration, where the anterior chamber is destroyed, are far from attractive objects on which to undertake the operation. It is also very important that flap and hole (Hippel's clockwork trephine with the 5 mm. crown is used in the operation) should exactly tally. No forceps or scissors and no antiseptics must be used, and the flap must be manipulated by small warmed pads only. Lastly, deep general anæsthesia is necessary.

R. GRUBER.

VII.—PARASITES.

- (1) de Milly. — A case of filaria of the eye. (Observation d'une filaire de l'œil) (*Ophthalmologie Praticale*, 11, 73, août, 1905).

2. Cosmettatos. — Sub-conjunctival cysticercus (Cysticercus sous-conjonctival.) *Ann. d'oculistique*, T. CXXXIV, p. 293, octobre, 1905.
3. Demicheri. — A case of hydatid cyst of the orbit. (Quiste hidatico de la orbita.) *Archivos de Oftalmologia Hispano-Americana*, Noviembre, 1905.
4. Calderaro. — A case of echinococcus in the orbit, successfully treated by operation. Un caso die cisto da echinococco dell'orbita, operazione, guarigione. *La Clinica Oculistica*, March, April, 1906.
5. Greeff, R. — On the presence of worms in the eye. (Ueber das Vorkommen von Wurmern in Auge.) *Archiv f. Augenheilkunde*, Dezember, 1906.

(1) **de Milly** removed from the eye of a missionary from the Congo a filaria loa 6 cm. long. The parasite made its appearance at intervals several times daily beneath the conjunctiva, where it caused much pain and could be seen moving. R. J. C.

(2) **Cosmettatos** removed a sub-conjunctival cyst, measuring 11 mm. by 5 mm., from the internal angle of the eye of a boy, aged 16, which, on examination, proved to be a cysticercus. He describes the appearances seen in microscopic sections of the cyst, laying particular stress on the structure of the capsule, which, he says, has previously been little studied. This consisted of (1) an internal capsule consisting of fine connective tissue fibrils anastomosing with each other and forming more or less rounded meshes between which, and at the places where they crossed, were small rounded connective tissue cells and some capillaries with walls formed of a single cellular layer. (2) an external capsule consisting of 2 layers and an inner formed of reticulated connective tissue, and an outer denser one formed of elongated connective tissue fasciculi running parallel to the surface or obliquely. R. J. COULTER.

(3) In **Demicheri's** case, an exploratory puncture gave a purulent fluid; a second puncture extracted a serous, slightly turbid fluid, of completely different aspect. In neither fluid were found hooklets. The second fluid was sterile. There is always danger in making an exploratory puncture in these cases, since the pericystic fluid is often purulent, and thus germs may be carried into the sac of the cyst, although all possible precautions be taken. Demicheri's patient suffered from fever as a result of the puncture. Of course there is no objection to puncture immediately before an operation.

HAROLD FREEMAN

(4) In the case related by **Calderaro**, the symptoms supposed to be diagnostic of the disease were all wanting. The patient had suffered from proptosis for six years; the onset had been fairly rapid during six months, but since that time the condition had been stationary. There was no pain, no change in the optic nerve, and no fluctuation palpable in the tumour, which could be felt pushing the globe forward. Diagnosis was made by an exploratory puncture, but this was followed by intense inflammation of the orbit, and it became necessary to perform Krönlein's operation. The eventual result was good.

HAROLD GRIMSDALE.

(5) **Greeff** reviews our knowledge of parasites that occur in the eye, because he thinks that the interest in the subject has diminished unduly during the last few years, owing to the all-absorbing study of bacteriology. The worms that concern us are the trematodes, cestodes, and nematodes. Trematodes have been found frequently in the eyes of fishes, and v. Nordmann and Gescheidt have observed them in an old woman and in a child respectively. Of cestodes, the *cysticercus cellulose* and the *tania echinococcus* have been seen in the human eye. Observations regarding the former are getting rarer every day, and the only undoubted cases of *echinococcus* are the two of Griffith and Werner. Nematodes are also seldom found in the eye, and *filaria loa* has been the only species observed so far.

PERCIVAL J. HAY.

VIII.—TREATMENT.

- (1) **Domec**.—First applications of suction-massage. (*Premières applications du massage-ventouse*.) *La Clinique ophtalmologique*, 25 octobre, 1906.
- (2) **Haass**.—Mitin, a new ointment basis. (*Mitin, eine neue Salbengrundlage*.) *Wochenschrift für Therapie und Hygiene des Auges*, 27. Dezember, 1906.
- (3) **von Arlt, F. R.** The use of dionin for several months in cases of retinal hæmorrhage and of corneal scars [*Maculæ corneæ*]. (*Die mehrmonatliche Anwendung von Dionin bei Netzhautblutungen und bei Kornealnarben [Maculæ corneæ]*.) *Wochenschrift für Therapie und Hygiene des Auges*, 13. December, 1906.

- (4) Thiébauld.—Notes and observations on the use of radium (Epitheliomata, scleritis, trachoma). (Notes et observations sur l'emploi du radium [épithéliomas, sclérites, trachoma].) *La Clinique ophtalmologique*, 10 décembre, 1906.
- (5) Dor, Louis.—The prophylaxis of infection of the eye by the administration of iodide of potassium on the day before operation. (Prophylaxie de l'infection de l'œil par l'ingestion d'iodure de potassium la veille de l'opération.) *L'Ophtalmologie Provinciale*, T. III, p. 135, décembre, 1906.
- (6) Grunert.—Thiosinamin in eye diseases. Thiosinamin in der Augenheilkunde. *Bericht über die dreund-dreissigste Versammlung der Ophthalmologischen Gesellschaft*, Heidelberg, 1906.
- (7) Valois, G.—Intraorbital injections in a case of sympathetic ophthalmia. Injections intra-orbitaires dans un cas d'ophtalmie sympathique.) *Revue d'ophtalmologie*, janvier, 1907.
- (8) Bonte.—Treatment of retinal detachment. (Traitement du décollement de la rétine.) *La Clinique ophtalmologique*, 10 janvier, 1907.
- (9) Kauffmann.—On ocular remedies in the sixteenth century. (Ueber Augenheilmittel im XVI Jahrhundert. *Wochenschrift für Therapie und Hygiene des Auges*, 31 Januar, 1907.

(1) Domec has had a cupping glass made of shape similar to that of the ordinary eye douche, and by attaching it to a pump is able to "massage" the eye forwards and backwards. He claims that this kind of treatment relieves pain, although the actual application, even when gently and slowly performed, is very disagreeable. The communication is evidently a preliminary one, intended to draw attention to the method.

ERNEST THOMSON.

(3) von Arlt relates the cases of two myopes of 8-10 D., in each of whom there were macular hæmorrhages in the right eye. In one there were corneal opacities in the left eye, and in the other old macular changes in the left eye. Treatment by dionin alone was carried out for about six months with the result that vision was greatly improved in three eyes out of the four; the one which presented old macular changes did not improve. The treatment consisted in the introduction of 0.05 gramme of dionin

followed by gentle massage, once a week. The author points out that there could be no doubt about the clearing up of the corneal opacities, but admits that it is not so certain that the disappearance of the recent macular hæmorrhages was due to the dionin treatment. A good bibliography on dionin is appended.

ERNEST THOMSON.

(4) In this article, **Thiébauld**, of Algiers, proves himself to be an indomitable therapist. In spite of lamentable failure with radium in the treatment of an epithelioma of the eyelid, he persisted in his observations on its effects in other diseases, more especially in trachoma. With this latter he has had a great deal of success in very severe cases. He sums up, not with a panegyric, but in the following moderate words: "Radium therapy has a future; it is undeniable that in radium we have a powerful weapon, I venture to say there is no other like it; nevertheless, before exalting its mysterious virtues, it is right to observe without bias, to group and to study comparatively cases which are similar, in order to draw logical, and at the same time practical conclusions."

ERNEST THOMSON.

(5) **Dor**, relying on the results of laboratory experiments with regard to the prophylactic action of iodide of potassium on intra-ocular infections, has given to each of the patients on whom he has operated for the past five years, 3·4 grammes of iodide per day for two or three days, commencing the day before the operation, and has not had the slightest symptom of infection in any case. He quotes as an example the case of a man with cystitis, on whom he operated for cataract with an excellent result in most unfavourable surroundings, although his other eye had previously been lost from panophthalmitis following an extraction.

R. J. COULTER.

(6) **Grunert** has treated several cases of cicatricial ectropion and post-neuritic atrophy of the optic nerve by the intra-muscular injection of thiosinamin, to which he at first adds strychnine. He gives the following formula: thiosinamin, 4·0; glycerine, 8·0; distilled water to 40. Of this mixture $\frac{1}{2}$ to $1\frac{1}{2}$ c.cm. are injected, at first daily, and then with lengthening intervals. The treatment is abandoned if no good result is seen in eight days. Grunert believes that similar means are calculated to benefit vitreous opacities.

S. S.

(7) **Valois'** patient was a child, seven years of age, who had a severe wound of the cornea with prolapse of iris. After excision of the prolapse all went well for a week, when the eye suddenly became painful with circumcorneal injection and *rimus* tension, and the uninjured eye showed fine Descemetitis and fixed pupil. The injured eye was excised and the sympathetic symptoms abated, but recurred more severely ten days later.

Two drops of a 1 per cent. solution of cyanide of mercury were injected deeply into the socket of the excised eye. Next day the redness of the eye had diminished, but the Descemetitis persisted, so the injection was repeated two days later. A week later the eye became red again, and ten drops of the solution were then injected, and the symptoms entirely disappeared after a few days. The pain caused by the injections is very severe, but may be diminished by adding a little cocaine to the solution. This is the third case of sympathetic ophthalmia which Valois is convinced he has saved by means of injections.

J. JAMISON EVANS.

(8) **Bonte**, after summarising the various methods of treatment which have been employed, states that he proceeds as follows: (1) subconjunctival injections of a cubic centimetre of concentrated solution of sodium chloride with three drops of a 1 per cent. solution of acoïne, repeated at intervals of a few days; (2) absolute dorsal decubitus; (3) cauterization of the sclera at a number of points in the region of the detachment; (4) treatment of the cause, as myopia, syphilis, etc. A successful case is related.

ERNEST THOMSON.

IX.—BACTERIOLOGY.

1. **Brons, C.**—Contribution to the question of Gram-negative diplococci of the conjunctiva. (Beitrage zur Frage der Gram-negativen Diplococcen der Bindehaut. *Klin. Monatsbl. f. Augenheilkunde*, Januar, 1907.
2. **zur Nedden.**—On streptothrix infection of the eye. Ueber Infektionen des Auges mit Streptotrichen. *Klin. Monatsbl. f. Augenheilkunde*, Februar, 1907.

(1) **Brons** found in six cases of slight or moderate conjunctivitis in adult patients diplococci which did not stain by the method of Gram. As their morphological qualities were not sufficient for identification, Brons resorted to elaborate and careful culture experiments. The biological properties, thus disclosed, enabled him, on the one hand, to distinguish the organisms from gonococci and meningococci, and, on the other, to identify them with "micrococcus catarrhalis." Similar diplococci were found in the purulent discharge of a lacrymal sac, but again their cultural peculiarities made them appear a separate entity. The author is careful to point out that in practice, doubtful cases are sure to be rare in which it would be necessary to have recourse to end-

less culture experiments. As a rule, cover-glass preparations, in conjunction with the clinical features of the case, are sufficient for a definite diagnosis. C. MARKUS.

(2) zur Nedden succeeded in proving streptothrix infection as the cause of two different eye diseases. The first case was one of calcareous concretion in the lower canaliculus, which was surrounded by a small abscess pointing towards the conjunctival sac. In the second case, a child, aged six years, was seen with an affection of the cornea which resembled disciform keratitis. Material taken from the infiltrated centre and transferred to agar-tubes gave rise to numerous colonies of streptothrix. These fungi injected into the corneal tissue of a rabbit caused a violent keratitis with hypopyon, but inoculation of the corneal epithelium remained without result. The disease in the child took a protracted course and was severe enough for a Saemisch operation to be performed. C. MARKUS.

X.—MISCELLANEOUS.

Tornabene, C.—On the alterations of the ciliary processes following paracentesis of the anterior chamber and lesions of cervical sympathetic. (*Sulle alterazioni dei processi ciliari consecutive a paracentesi della camera anteriore ed a lesioni del simpatico cervicale.*) *Archivio di Ottalmologia*, Vol. XI, Fasc. 7-8, Jan.-Feb., 1904.

Tornabene's experiments in making a single paracentesis, or two paracenteses, at an interval of a few minutes, and in immediately enucleating the eye for mounting and examination under the microscope, have shown him that the increase in the traces of albumen in the aqueous humour is not strictly related to the formation of the vesicles on the ciliary processes described by Greef, following upon similar researches. Besides, the excitation or extirpation of the upper cervical ganglion of the sympathetic induces an increase of albumen in the aqueous humour without any formation of vesicles: after excitation the microscopical examination reveals a simple reduction of the calibre of the vessels, whilst after extirpation one observes slight œdema in the ciliary body, vascular dilatation, etc. A. ANTONELLI.

Elschnig.—Detachment of the vitreous body. (Ueber Glaskoerperablosung. *Klin. Monatsbl. f. Augenheilk.* 1904, Bd. II, p. 529.

Elschnig examined seventeen eyes with myopia of from 2. to 30 D., and five eyes with staphylomata, and found in four

cases that the vitreous body was attached to the lens and ora serrata, the posterior part of the bulbus filled with a fluid containing fine fibres. Residues of the vitreous body were fixed on the surface of the retina. Elschnig holds that detachment of the vitreous body in myopic eyes occurs very seldom, but that the vitreous body is often diluted, as Arlt has described.

A. BIRCH-HIRSCHFELD.

Bielschowsky, A.—On the genesis of unilateral vertical movements of the eyes. Ueber die Genese uniseitiger Vertikalbewegungen der Augen. *Zeitschrift für Augenheilkunde*, October, 1904.

Bielschowsky recounts two cases of this peculiar dissociation. The first was a man, age 23 years, both of whose eyes were emmetropic and possessed full visual acuity, who has been able since childhood voluntarily to move his left eye upwards. Objects which are in the central field of vision can be fixed either binocularly or monocularly with the right eye, in which case the left eye travels upwards to the extent of about 12° . In fixing objects well over to the right, the left eye travels upwards, and cannot be brought down again. On looking strongly to the left it is impossible for him to allow the left eye to deviate upwards. On fixing with the left eye (keeping the right covered), the right eye deviates downwards approximately to the same extent. The second case, that of a girl, age 13 years, in both of whose eyes there existed a hypermetropia of 7D. V. with glasses = R. $\frac{6}{7}$. V. with glasses = L. $\frac{6}{7}$. Without her correction she has a periodic convergent and sursumvergent strabismus of the left eye. On wearing her correction the horizontal component of this squint disappears, while the vertical remains latent. If after correcting the hypermetropia the patient is made to fix binocularly a distant object held in front of her, and then covering the left eye, this eye can be seen to make a rapid movement directly upwards, accompanied by a similar movement of the left upper lid. The eye, however, does not maintain this raised position, but with intervals of about a second slowly falls and rises again. This pendulum movement lasts as long as the eye remains covered. As soon as it is uncovered fixation becomes binocular, and the movement stops. If the right eye be covered it deviates upwards, but to a less extent than the left, and remains practically stationary. These two cases show the following points: (1) in order that a dissociated vertical movement of an eye shall take place it is necessary that, temporarily or permanently, binocular vision shall be suspended; (2) that all voluntary movements of the eyes are associated movements; and (3) that the unilateral movements are not

subject to the will. The author takes these facts to show that besides the cortical centres for the associated movements there must exist other subordinate motor centres for each eye separately, which are independent of one another and of the will; that normally the eyes are innervated from the cortical centres alone, and it is only when the influence of these are excluded, as for instance in sleep and in narcosis, or in monocular vision, where the influence of fusion tendency is lacking, that these subordinate centres can become active and bring about movements such as has been described.

A. LEVY.

Bichelonne.—A contribution to the study of optic neuritis of infectious origin. (*Contribution à l'étude des névrites optiques d'origine infectieuse.*) *Ann. d'Oculistique*, T. CXXXII, p. 352, novembre, 1904.

Bichelonne records the case of a soldier, aged 22 years, who two weeks after recovery from an attack of catarrhal angina developed a bilateral optic neuritis with oedema, became blind rapidly and remained so for over 6 months, after which time he gradually recovered, regaining normal vision in the course of a month and a half.

Bichelonne considers that if the blindness in this case had been caused by compression of the optic nerve, vision could not have been restored after 6 months. He thinks the neuritis was due to toxins in the blood, producing congestive vaso-motor changes in the papilla by impregnating the perineural spaces or the nerve itself, and acting directly on the latter.

R. J. COLLIER.

Parinaud.—Stereoscopy and visual projection. (*Stereoscopy et projection visuelle.*) *Ann. d'Oculistique*, T. CXXXI, avril, mai, and juin, 1904.

Parinaud gives a systematic account of opinions which he has previously published in a less connected manner in his books on "Vision," and on "Strabismus and its Treatment." These are summed up in the following statements:—

1. Stereoscopic vision is obtained by the fusion of virtual images of the figures employed, not by fusion of the figures themselves.

2. Stereoscopic relief is caused by differences in the localisation of these virtual images, according to whether they are projected by corresponding or non-corresponding retinal points.

3. These differences are a consequence of the localisation of the binocular images at the meetings of the principal and secondary axes of projection.

The articles which occupy eighty-six pages should be read in the original by those who are interested in the subject.

R. J. COULTER.

Polack.—Manifestations of the chromatism of the eye and visions of colours. (Manifestations du chromatisme de l'œil et vision des couleurs.) *Ann. d'oculistique*, T. CXXXII, p. 424, décembre, 1904; and *Recueil des Travaux X^e Congrès int. d'ophtalmologie*, Lucerne, septembre, 1904.

Polack considers that the reason usually given for the invisibility of the colours resulting from the faulty achromatism of the eye is incorrect and gives the following explanation of the fact. The chromatic dispersion does not always appear as a narrow border surrounding the object but as areas of coloured light around it often of relatively large size. If the object is not on a dark background this coloured light acts on the retina at the same time and place as the light from neighbouring planes causing more or less complex mixtures, which give rise to sensations of new colours. He discusses the effect of such mixtures under various circumstances in eyes accommodated for the red end of the spectrum, *i.e.* myopic, or for the blue end, *i.e.* hypermetropic. He considers that myopia is of advantage to painters as it tends to make the colours surrounding objects seen on a red or orange background appear richer.

R. J. COULTER.

Hikida, H.—Notes on the changes produced in the lens by hardening agents and post-mortem processes. (Bemerkungen über den Einfluss der Härtung und des Absterbens auf die Linse.) *Arch. f. Augenh.*, Oktober, 1906.

Hikida's paper refers to a series of microscopical examinations of lenses taken from the eyes of oxen, calves, pigs, and rabbits. The lenses were either hardened immediately, or left in physiological salt solution till opaque, and then placed in hardening solutions. The object of the work was to see whether the shrinking produced by the chemical agents, or by death of the lenticular cells, caused any appearances similar to those observed in senile cataract and attributed to shrinking of the nucleus. Hikida finds, that such is the case and hence supports the latter view of the ætiology of senile cataract.

PERCIVAL J. HAY.

Duuring. - A new bottle for eye medicament. (En nieuw druppel fleschje. *Ned Tijdschrift v. Geneeskunde*, 1905, L, p. 76.

Ordinary bottles sometimes cannot be opened, the pipette being firmly fixed in the neck of the bottle by crystals of the alkaloid or of the boric solution in which it has been dissolved. This annoying occurrence **Duuring** seeks to obviate by attaching a glass cap, fitting over the neck of the bottle, to the pipette.

G. F. ROCHAT.

Elschnig, A.—Remarks on "True Hypertrophy" of the external eye muscles. (Bemerkungen ueber die wahre Hypertrophie der ausseren Augenmuskeln.) von Graefe's *Archiv für Ophthalmologie*, Bd. 63, 3 Heft, 22 Mai, 1906.

Elschnig proves that what **Mauch** describes under the name of hypertrophy is no abnormality at all but only due to contraction of the muscles if divided *intra-vitam*, compared with the longer but thinner shape of the muscle in the cadaver. The difference in the anatomical appearances is very striking, the proportion being about 1:3.

R. GRUBER.

Moraes, E. R. de.—A contribution to parenchymatous keratitis in animals. (Ein Beitrag zur Kenntniss der Keratitis parenchymatosa bei Tieren.) *Arch. f. Augenh.*, Februar, 1907.

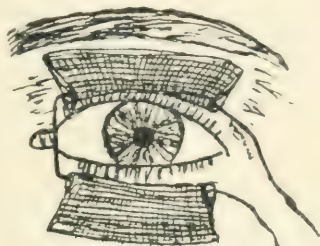
Moraes examined the eyes removed from a bull, the subject of a parenchymatous inflammation of the cornea. The animal appeared to be otherwise healthy. The cornea was very much thickened. At the margin there was a network of newly-formed vessels, while leucocytes were found everywhere in the parenchyma. The epithelium covering the anterior surface seemed normal, so also the endothelium lying upon Descemet's membrane, only here it was covered by a thick layer of leucocytes. Leucocytes also lay spread over the surface of the iris, and penetrated into its substance, besides being present in large numbers in the anterior chamber. The ciliary body was found to be covered with a thick, white mass of inflammatory material, microscopic sections of which revealed typical giant-cells.

PERCIVAL J. HAY.

Francis, Lee Masten. The treatment of keratitis and lagophthalmus. *American Medicine*, April, 1907.

Francis describes an ingenious method of approximating the lids without the necessity for actual suture. "A piece of gauze is folded upon itself and a truncated triangular section is

cut out, the folded side representing the truncated portion." This is done for both lids. One flap of each piece is cemented to its respective eyelid with flexile collodion; a silk thread, with the free ends towards the outer canthus is placed in the creases and the free flaps are turned over and cemented to the fixed



flaps, care being taken not to put collodion in the loops or on the thread. To allow room for traction on the lids the gauze is kept back a few millimetres from the ciliary margin. By tying the free ends of the thread the lids are held in position, but can be separated by untying the bow-knot. The appearance of the appliance is well indicated in the diagram.

ERNEST THOMSON.

REVIEWS.

A Text-book of Ophthalmic Operations. By HAROLD GRIMSDALE, M.B., F.R.C.S., Ophthalmic Surgeon and Lecturer on Ophthalmic Surgery to St. George's Hospital, Surgeon to the Royal Westminster Ophthalmic Hospital, and ELMORE BREWERTON, F.R.C.S., Ophthalmic Surgeon to the Metropolitan Hospital, Surgeon to the Royal Westminster Ophthalmic Hospital. London: Kegan Paul, Trench, Trübner, & Co. 1907. Price 12s. net.

It is surprising that whilst several books have been written dealing specially with the operations of general surgery, one dealing similarly with the operations of ophthalmic surgery has not previously been published in this country. It becomes all the more remarkable when it is found how useful and instructive a volume on this subject Grimsdale and Brewerton have now managed to produce.

Their book is a clearly written, well-printed volume of 349 pages. It contains 116 figures in the text, consisting mostly of

diagrams showing different stages in the operations, which materially assist the descriptions given.

The plan of the book is first to give a short account of the anatomy of the part upon which the operations, about to be described, are performed. Then follows a description of the conditions which it is proposed to remedy, and a discussion as to the relative merits of the different procedures employed. Finally, the stages of each operation are given in detail.

In this way a mass of material is brought together and made easily accessible, to find which would otherwise have entailed much search amongst treatises and periodical publications in various languages.

As is well known, for some affections of the eyes and eyelids, an almost bewildering number of different operations have been introduced. The way in which the authors of this book have classified these several procedures is most satisfactory. As an example of their method, the grouping of the different operations for ptosis employed by them may well be quoted :—

Group 1.—Shortening of lid or levator.

(a) Excision of skin.

(b) Excision of parts of tendon or tarsus (method of Bournan).

(c) Folding of tendon (method of De Lapersonne, Eversbusch).

(d) Excision of tarsus.

Group 2.—Utilising the action of frontalis muscle.

(a) By artificial tendon (method of Pagenstecher, Mules).

(b) Altering the relation of the skin (method of Panas, Hess).

(c) Attaching of frontalis to the lid (method of Fergus).

(d) Attaching the tendon of the levator to the frontalis (method of Sourdille).

Group 3.—Utilising the action of rectus superior.

(Method of Motais, Parinaud).

Cicatricial ectropion is a condition in dealing with which it is well that an ophthalmic surgeon should be familiar with several alternative procedures, the position and extent of the scarring which has caused the defect rendering sometimes one and sometimes another the more suitable. In this book eight different methods of operating for this condition are described, but, unfortunately, Argyll Robertson's plan, published in the *British Medical Journal* in 1898, is omitted. Unfortunately, because it possesses the distinct advantage that the cicatrization following the operation tends to intensify the desired effect instead of diminishing it, as is usually the case.

It is a pity also that amongst the operations on the conjunctiva some mention has not been made of those performed in cases of trachoma, *viz.* : expression of the trachoma follicles ; Galezowski's operation of excision of the retro-tarsal fold ; and Kuhnt's more recently introduced procedure for excision of the tarsus.

The chapters dealing with the operations for cataract and glaucoma are naturally two of the most interesting in the book. In the former, a description is first given of the old operations of depression and reclinatio*n*, which, the authors think, may be sometimes suitably employed in the insane, in cases of incurable dacryocystitis, and where one eye has been lost from intra-ocular hæmorrhage after operation.

After detailing the different operative methods employed for maturation of cataract, the conclusion is arrived at that none of the proceedings is entirely unobjectionable, on account of the risks of setting up iritis or of rupturing the lens-capsule.

There has been so much difference of opinion about all the stages of extraction of cataract that it is satisfactory to read that : " the position of the incision may be regarded, now, as fixed within very narrow limits. Almost all now would choose the upper part of the sclero-corneal zone in which to place the section."

The authors consider the safest method of dealing with senile cataract is to extract at an interval after a preceding iridectomy. In discussing the relative advantages of this plan, as compared with others, they fail to point out that it entails opening the anterior chamber twice, and thus two separate risks of possible infection ; that there is great difficulty in getting a satisfactory conjunctival flap at the second operation ; and, lastly, that the patient has to summon up courage to face two ordeals instead of one, often a trying enough matter for an elderly person.

With regard to opening the capsule, the authors say that there seems no doubt that the grasping of it with forceps is the most certain mode of removing it from the whole pupillary area, but, unless the operator is possessed of more than ordinary delicacy of touch, there is some risk of dislocating the lens into the vitreous by rupturing the zonule when the capsule is seized. For this reason, the authors advise beginners to use the cystitome until the necessary skill has been gained.

Figure 102 is a diagram constructed to compare the position of the incision at the sclerocorneal margin for cataract and glaucoma. The line of the incision in glaucoma is shown passing just external to the canal of Schlemm. Many operators, doubtless, think they pass their knife in the direction shown. Sections of

eyes which have been operated on for glaucoma, when examined microscopically, however, invariably show that the line of section has not passed external to, or even through, the canal of Schlemm, but well internal to it.

In describing the use of the keratome for iridectomy for glaucoma, the operator is instructed in withdrawing the knife "to carry the handle backward and make the point slide along the posterior surface of the cornea." Such a procedure would most likely lacerate Descemet's membrane, allow of filtration of the aqueous humour into the cornea, and possibly favour the formation of an anterior synechia.

The authors very rightly point out that an important complication, which occasionally follows iridectomy for glaucoma, is severe hæmorrhage immediately after the operation, the flow of blood driving the vitreous and lens out of the eye. They are incorrect, however, in saying that hæmorrhage of this kind must take place into the vitreous chamber. It is mainly subchoroidal, and it is the separation of the choroid from the sclerotic towards the interior of the eye which forces out its contents. This is well shown in museum specimens of eyes which have been removed for this condition.

Although it is possible to point out a few omissions and defects in this book, in conclusion it must be stated that it goes very fully and thoroughly into the subject with which it deals, and that the advice given respecting the choice of operations is uniformly sound and trustworthy. E. T. COLLINS.

Quelques Documents nouveaux sur l'opération de Motais.

This is a *brochure* of 54 pages, published by Germain and G. Grassin at Augers, in which seven papers on Motais' operation for ptosis are reprinted from *L'Ophthalmologie Provinciale*. The papers are—on congenital ptosis by Bassa, Truc, Lagrange, and Trantas; on both congenital and acquired forms by Gendron and by H. Dixon Bruns; and, finally, a paper by Motais himself on the operation in general. E. T.

Die Bakteriologie in der Augenheilkunde. (Bacteriology in Eye Work). Von TH. AXENFELD. Jena: Verlag von Gustav Fischer. 1907. pp. 362. Price, 13 marks, bound.

Ophthalmic surgeons have long felt the want of a work such as this—one dealing with bacteriology in all its bearings upon ophthalmology. "Ophthalmic Bacteriology" is intended both for those of us who possess, or who wish to acquire, a practical acquaintance with bacteriological methods of diagnosis in eye diseases, and for those who without

being, or wishing to be, bacteriological experts, desire to become familiar with the methods of treatment which a knowledge of the micro-organisms concerned has rendered possible. The book, the work of a man designed naturally by his previous researches to write it, is admirable both in conception and execution. Together with an authoritative account of the microscopical and biological characters of all the organisms known to ophthalmic practice, we find a clear and succinct guide to the bacteriological examination of the conjunctiva, the cornea, etc., a description of the bacterial flora of the healthy conjunctiva, an exposition of the clinical features of the diseases produced by the various micro-organisms, and, lastly, valuable notes and hints regarding treatment.

The opening chapter deals with bacteriological *technique*; first, the methods of collecting material from the different parts of the eye; next, the modes of staining bacteria in films and tissues; and, then, cultures and inoculations. The directions are for the most part brief and to the point. The following chapter is a valuable one and deals with the micro-organisms found on the healthy conjunctiva. Much attention is given to the so-called bacillus of xerosis, that bugbear of every beginner. A careful study of this organism and of staphylococcus albus will tend to prevent, amongst other things, the discovery of many "new" germs of disease. We note that the question of identity of the bacillus of xerosis with the non-pathogenic varieties of Löffler's bacillus meets with careful consideration. The author holds that such identity is not proven. Diseases of the lids form the subject of the next chapter, and wounds of the eye are discussed in Chapter IV. The latter is particularly well written, and contains much valuable advice. Such important matters are gone into as the bactericidal effect of the tears, the prevention of infection, post-operative conjunctivitis and its causes, the *pros* and *cons* of bandaging with reference to the development of bacteria, serum treatment, etc. In view of the fact that the pneumococcus is the most common cause of post-operative suppuration, the author gives a subcutaneous injection of anti-pneumococcal serum in such cases, where the pneumococci are present in larger numbers, or the patient is debilitated, or is the subject of advanced diabetes, or where the operation has been a difficult one. So far he has met with no reverse due to this organism. The result is noteworthy, since, as we know, treatment with anti-pneumococcal serum has not met with conspicuous success in another class of cases, *viz.*, corneal ulcers. The next two chapters are devoted to conjunctivitis and form a comprehensive treatise on the various organisms of pathogenic interest in this connection. Where the clinical signs

are sufficiently typical, the author discusses the germs under such headings as "Diplobacillary conjunctivitis," "Koch-Weeks' conjunctivitis," "Pneumococcal conjunctivitis," etc. This is certainly a classification in favour of which much may be said. The future, however, must show whether it is practicable. The following particulars of the various bacilli, etc., are given: history, geographical distribution, epidemiology, clinical features, microscopical characters in exudates, cultures, morphology, resistance, pathogenesis, differential diagnosis and treatment. It lies in the nature of the case, that questions of differential diagnosis play a very important part in these descriptions, and where the differences are minor ones, or doubtful, detailed reviews of the subject are given, as in the case of the Koch-Weeks' bacillus and Pfeiffer's bacillus, the diplobacillus of Morax-Axenfeld and that of Petit, the gonococcus, the micrococcus catarrhalis, and the meningococcus. The ætiology of phlyctenular conjunctivitis and of trachoma is fully discussed, but is admitted to be still obscure. With regard to the former the experiments of Nias and Paton are not regarded as conclusive. The subject of the next chapter is dacryocystitis. Of special interest here are the pages on streptothrix and actinomyces. Then follows an excellent chapter dealing with the cornea, in which much original work will be found. Axenfeld was one of the first to point out the relationship between the pneumococcus and the serpiginous ulcer. Many readers will devote particular attention to a discussion on the merits of treating the serpiginous ulcer with anti-pneumococcic serum. The author recommends serum treatment combined with the measures usually adopted in the treatment of this form of ulceration. He suggests that better results may possibly be obtained with aggressins. Incidentally it may be permitted to draw attention to the obvious advantages to be obtained from an early diagnosis of the organism present. Chapter IX concerns leprosy, tubercle, and syphilis. As regards treatment of tuberculosis of the eye, v. Hippel's tuberculin diagnosis and treatment are preferred to the methods advocated by Wright. Chapter X deals with endogenous infections of the eye, and more particularly with sympathetic ophthalmia. The beautiful experiments of Stock and Römer receive due recognition, and are justly considered as having rendered the Leber-Deutschmann theory untenable. Diseases of the orbit form the subject of the last chapter.

The illustrations are very good, many of them being coloured and daringly printed in the text. A most useful aid to differential diagnosis will be found at the end of the book, in the form of a

tabular account of the chief organisms. A bibliography accompanies each chapter. Finally, the index is good, although English readers may experience a little difficulty here and there, owing to the circumstance that we do not yet possess an international nomenclature.

Up to the present, Axenfeld's contribution to Kolle and Wassemann's *Treatise* contained the only connected account of the bacteria found in diseases of the eye. The book was not easy of access. In the work before us that account is extended and completed. It forms the leading text-book on the subject of which it treats, and should be found in the laboratory of every eye-hospital and in the library of every ophthalmic surgeon. To those who are not already convinced of the utility—nay, necessity—of bacteriological examinations in affections of the eye, it is destined to show that, although clinical signs and symptoms still retain the first place in diagnosis, they should be supplemented by bacteriological investigations. P. J. HAY.

NOTES AND ECHOES.

Obituary.

WE regret to announce the death of Hugo Magnus, which occurred at Breslau on April 13th last, after a somewhat long illness, borne with exemplary patience. Magnus was born in 1842 at Neumarkt, in Schleswig. He took his medical degree at Breslau in 1867, settled as *Privatdocent* of ophthalmology in that city in 1873, and was appointed extraordinary professor in 1883. He was a prolific writer. Some of his best-known works were on colour-blindness and the colour-sense, and latterly he paid much attention to the history of ophthalmology. That useful work, his *Augenärztliche Unterrichtstafeln*, of which twenty-five numbers have so far been published, is known to every ophthalmic surgeon. Dr. Adolph Gad, Director of the department of ophthalmology in the Copenhagen Polyclinic, is dead, aged 60 years. R. I. P.

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Appointments.

CARL HESS, of Würzburg, has declined a call to Strassburg, in succession to Laqueur, retired on account of advanced age. The appointment has now been offered to Wagenmann. Heine has been nominated Professor of the Ophthalmological Klinik in the University of Greifswald. Kruckmann has succeeded

Kuhnt at Königsberg. J. A. de Abreu Flalho has been appointed professor of ophthalmology in Rio-de-Janeiro. A Elsching, of Vienna, has been appointed ordinary professor of ophthalmology in the German University of Prague Bohemia. Leslie Paton has been appointed assistant ophthalmic surgeon to the National Hospital for the Paralysed and Epileptic, Queen's Square, London, W.C. Landmann, of Breslau, has received the title of *Sauftat*; von Volkers has been bestowed the Prussian Order of the Red Eagle, second class.

* * * *

The Ophthalmological Society. THE first extra-metropolitan meeting of the Ophthalmological Society will have been held at Edinburgh before these lines are in the hands of readers. Members will dine on the evening before the meeting at the Caledonian Hotel in the city. The meeting will be held at 10 o'clock a.m., on May 25th, in the eye department of the Royal Infirmary. A good list of contributions is announced, including papers and demonstrations and cases by Coats, Edridge-Green, Bruce, Buchanan, Stephenson, McGillivray, Sinclair and Sherman, Fleming, Bramwell, Berry, Mackay, Sym, Paterson, Ramsay, Herbert, and Pollock. From what we can hear, the meeting promises to be well attended.

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Bath Eye Hospital. THANKS to the receipt of a large legacy, we understand that the Bath Eye Hospital will be largely extended and greatly improved, so as to render it more than ever worthy of the honourable position it has for so long occupied among institutions of the kind.

* * * *

Blind Men's Trade Union. STRIKES in gay Lutetia have not been confined to electricians, to bakers, and to waiters, but have extended also to the staff of the National Institution for the Blind, Paris, four delegates from which have recently laid their grievances before M. Winter, of the Ministry of the Interior. According to the *Daily Mail*, "clad in threadbare black coats and aged silk hats they were led from the antechamber to the official's room by a servant who held the leader by the hand. The others groped their way in Indian file, each with a hand on the shoulder of the man in front of him." Their reception appears to have been of a sympathetic nature, and the deputation withdrew, after protesting their loyalty to the Republic.

Changes at the Paris Hospitals.

THE following ophthalmological appointments at the Paris hospitals date from the 15th of May last:—Hôtel Dieu: de Laperonne, Professor, Joseph, *adjoint*; Landolt, *chef de clinique*; Monthus, *chef de clinique adjoint*. Hôpital Lariboisière: V. Morax, ophthalmologist; Beal, assistant; Druais, *élève*. Hôpital Laennec: Rochon-Duvigneaud; Auffray, assistant; Caillaud, *adjoint*. Hôpital des Enfants Malades: Terrien.

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Certificates of Higher Medical Studies in France.

AS PART of a scheme for raising the scientific standard of the medical profession by improving the class of teaching in the schools, the French Government has recently created a certificate of superior medical studies, which must be held by all candidates for the posts of professor or *agrégé*. To obtain this it will be necessary to spend a considerable time in further study after obtaining the degree of Doctor of Medicine: and anyone, who from being already in practice, or for any other reason, is unable to do so, will be disqualified from obtaining one of the higher appointments. This action has caused considerable dissatisfaction among the medical profession in France, and the *Syndicat Général des Oculistes français* has joined with a number of other medical societies in protesting against it, on the grounds that while the creation of such an intermediate certificate is unnecessary if the final tests required are sufficiently severe, it would act prejudicially by dividing the profession into two castes, and lowering the status of the present degrees; and that what is required to raise the scientific standard of the profession is not a more or less insignificant reform of the course of study or of the mode of appointment of teachers, but a radical reorganization of the methods of teaching.

A deputation to the Ministry of Instruction was informed that the proposal to create the new certificate would not be abandoned, but that its title would be modified so as to show it to be merely a certificate of fitness to teach. It is, however, hoped that by united action of the medical profession, further concessions may be obtained.

In consequence of this agitation, Prof. Moitais was requested to draw up a report as to the lines on which the medical course should be reorganised, with especial reference to ophthalmology. This he has done after circularising all the members of the *Syndicat* to ask their opinions. He recommends that all medical students should be required to attend a three, or preferably a six, months' course of ophthalmology, in which they should be

taught to diagnose external diseases of the eye, and to treat such of them as do not require operative interference; and to have a sufficient knowledge of the symptoms of internal diseases to send them to a specialist in time; but that they should not have any instruction in the use of the ophthalmoscope or in operative treatment. For those who wish to specialise in ophthalmology, he suggests a two years' course of study in a recognised ophthalmic *clinique* after they have completed their ordinary studies, which could hardly be made compulsory, and would therefore have merely a moral value.

The other objects dealt with by the Council of the *Syndicat Général des Oculistes français*, the formation of which was referred to in THE OPHTHALMOSCOPE for 1906, include questions of hospital abuse, illegal practice, and fees recoverable under the French Compensation Act. As the action taken in these matters has met with considerable success, it would seem that this new French Society is justifying its formation; while the fact that two other bodies of specialists, the oto-rhinolaryngologists and the electro-therapeutists, have followed the example of our ophthalmic *confères* and formed themselves into similar syndicates, shows that such organisations are regarded in France as likely to be of value.

* * * *

**New York State
Commission to Investigate the Condition
of the Blind.**

THE following document has been issued to members of the American Medical Association by Dr. F. Park Lewis and Mr. O. H. Burritt, acting respectively as President and

Secretary of the New York State Commission to Investigate the Condition of the Blind:

The loss of sight in the case of an individual is of economic importance to the state. The New York State Commission to Investigate the Condition of the Blind has been charged, therefore, by the Legislature with the duty of inquiring into the causes of blindness, and of recommending methods by which, as far as possible, unnecessary blindness may be prevented. To that end the Commission begs the assistance and advice of the medical profession. The secretary will gratefully receive and acknowledge any reprints, reports, pamphlets—or personal communications bearing on the causes and prevention of blindness.

More especially information is sought on the following points:

CONGENITAL BLINDNESS:

Its causes, the influence of heredity, consanguinity, etc.

The reports of cases of blind parents producing blind children, character of blindness in such cases, etc.

OPHTHALMIA NEONATORUM:

How generally are preventive measures employed?

Statistics bearing on the subject.

What silver salt and in what strength should be recommended?

TRACHOMA AND OTHER INFECTIOUS EYE DISEASES:

Statistics.

How may early treatment be secured?

Prevalence in schools, orphan asylums, etc.

Preventive measures—medical inspection of schools.

BLINDNESS FROM ACCIDENT, INJURIES, FIREWORKS, TOXIC AGENTS, &c.
Statistics.

Method of protection for eyes of workmen, and others.

Prohibition of dangerous explosives at celebrations.

TOXIC AMBLYOPIA:

From methyl alcohol--other toxic agents. How may the public be protected?

NEGLECT ON THE PART OF PATIENTS VISITING DISPENSARIES:

Patients suffering from conditions threatening vision absent themselves from clinics after being advised of the need of immediate treatment until too late.

Method of reaching such.

BLINDNESS DUE TO NEGLECT OF SLIGHT OPHTHALMIC INJURIES:

How can early treatment be more generally secured?

BLINDNESS DUE TO IMPROPER HYGIENE AND SANITATION IN GENERAL

TROUBLES OF CHILDREN:

How can early treatment be secured?

OTHER CAUSES OF BLINDNESS:

Suggestions as to prevention.

The Commission will be most grateful for advice and assistance on the above subjects.

* * * *

PROFESSOR JOHAN WIDMARK, who has been
The Ophthalmoscope. connected with THE OPHTHALMOSCOPE
since the beginning, as our representative in
Scandinavia, has, to our great regret, been compelled, by the
pressure of work, to relinquish the post. Dr. Forsmark, one of
the lecturers in ophthalmology at the Carolina Institute,
Stockholm, has consented to act as Professor Widmark's
successor. Our new colleague has done distinguished work in
ophthalmology, and is especially well known in connection with
his monograph on the structure and development of the human
iris (1905).

* * * *

The University of
Oxford.

THE fourth annual course of ophthalmology
for practitioners of medicine will be held in
the University of Oxford, from the 15th to
the 29th of July next, by the Margaret Ogilvie's Reader in
Ophthalmology, Mr. Robert W. Doyne. Full particulars will
be found on reference to our advertising columns. The syllabus,
which includes lectures, demonstrations, and the examination of
patients at the Eye Hospital, is full enough to satisfy the most
hungry student. On the last two days (July 26th and 27th) a
congress of ophthalmic surgeons will be held, under the
presidency of Mr. Edward Nettleship, who will deliver an
address. A series of demonstrations has been arranged, amongst
which may be mentioned:—Professor Gotch, photoelectric
changes in the frog's eye produced by light of different
qualities; Mr. George Coates, re-action of eyeball to
retained foreign bodies; Mr. D. Barrett, F.R.S., experi-
ments illustrating colour-vision; Mr. P. H. Adams, coagulation

of the blood in its relationship to affection of the eye. Dr. V. Morax (Paris), ocular trypanosomiasis; Mr. Sydney Stephenson, demonstration of the *treponema pallidum* in ocular conditions. A feature of the congress will be the demonstration of new or novel methods of operating. Thus Professor E. Rollet, of Lyons, will demonstrate his method of extirpating the lacrymal sac; Lt.-Col. H. Herbert, the new operation he has devised for glaucoma, described in the present issue of *THE OPHTHALMOSCOPE*; and Professor Deutschmann (Hamburg) his surgical methods of dealing with detachment of the retina. It is also hoped that demonstrations of operations may be given by those acknowledged masters, Professor H. Kuhnt, of Bonn, and Dr. Lagrange of Bordeaux. A cordial welcome will be extended to any ophthalmic surgeon who sends his name to Mr. R. W. Doyne, 34, Weymouth Street, London, W. Visitors can be lodged and boarded in Keble College at the trifling cost of 7s. 6d. a day. Several excursions including one on the Thames, have been arranged.

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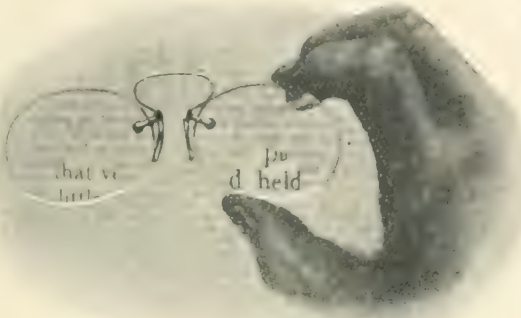
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The first part will be mainly devoted to demonstrating the practical examination of eye patients, the use of the Ophthalmoscope, and the work of refraction. During the second part the work will be more specialised.

The last two days, Friday and Saturday, July 26th and 27th, will be devoted to special demonstrations and the examination of interesting and unusual cases.

As well as the mere routine cases, there will be a large selection of patients of unusual interest for the benefit of those who are more experienced in eye work. Altogether some 500 cases will be present for demonstration.

SYLLABUS.

PART I.

MONDAY, JULY 15th.

- 10-11 Clinical lecture on the External Examination of the Eye, and Visual Acuity; by the Reader.
- 11.30-1 Practical demonstration of the above; by the Hospital Staff.
- 2-3 Clinical lecture at the Radcliffe Infirmary; by Professor Osler.
- 3-5 Practical instruction at the Eye Hospital; by the Hospital Staff.
- 8.30 Clinical lecture on the methods of using the Ophthalmoscope; by Mr. P. Adams.

TUESDAY, JULY 16th.

- 10-11 Lecture on Refraction; by Mr. P. Adams.
- 11-1 Practical demonstration of the methods of estimating Refraction; by the Hospital Staff.
- 2-3 Clinical lecture at the Radcliffe Infirmary; by Professor Osler.
- 3-5 Practical instruction at the Eye Hospital; by the Hospital Staff.
- 8.30 Practical instruction on the Ophthalmoscope; by the Reader.

WEDNESDAY, JULY 17th.

- 10-11 Clinical lecture on the Field of Vision; by Mr. P. Adams.
- 11-12 Practical demonstration of the Field of Vision; by the Hospital Staff.
- 12-1 Practical instruction at the Hospital; by the Hospital Staff.
- 2-5.30 Practical instruction at the Hospital; by the Hospital Staff.
- 8.30 Lecture on Colour Vision; by the Reader.

THURSDAY, JULY 18th.

- 10-1 Practical instruction at the Hospital; by the Hospital Staff.
- 2-5 Practical instruction at the Hospital; by the Hospital Staff.
- 8.30 Practical instruction at the Hospital; by the Hospital Staff.

FRIDAY, JULY 19th.

- 10-11.15 Lecture on the Conjunctiva; by Mr. Cargill.
- 11.30-12.45 Lecture on the Cornea; by Mr. Cargill.
- 2-3 Clinical lecture at the Radcliffe Infirmary; by Professor Osler.
- 3-5 Practical instruction at the Hospital; by the Hospital Staff.
- 8.30 Lecture on Congenital Anomalies; by Mr. Sydney Stephenson.

SATURDAY, JULY 20th.

- 10-11.15 Lecture on the Iris and Ciliary Body; by Mr. Sydney Stephenson.
- 11.30-1 Lecture on the Lens; by Mr. F. Richardson Cross.
- 2-5 Practical instruction at the Hospital; by the Hospital Staff.

MONDAY, JULY 22nd.

- 10-11.15 Lecture on the Choroid; by Mr. W. Lang.
- 11.30-12.45 Lecture on the Retina and Optic Nerve; by Mr. W. Lang.
- 2-5 Practical instruction at the Hospital; by the Hospital Staff.
- 8.30 Lecture on Motor Defects of the Eye; by Mr. Priestley Smith.

TUESDAY, JULY 23rd.

- 10-11.15 Lecture on Glaucoma; by Mr. Priestley Smith.
- 11.30-12.45 Lecture on Functional Troubles; by the Reader.
- 2-5 Practical instruction at the Hospital; by the Hospital Staff.
- 8.30 Lecture on the Orbit and Lacrymal apparatus; by Mr. P. Adams.

WEDNESDAY, JULY 24th.

- 10-11 Clinical lecture at the Radcliffe Infirmary; by Professor Osler.
- 12-1 Practical instruction at the Hospital; by the Hospital Staff.
- 2-5 Practical instruction at the Hospital; by the Hospital Staff.
- 8.30 Medical aspect of Ophthalmology; by Dr. Risien Russell.

THURSDAY, JULY 25th.

- 10-1 Clinical instruction on the medical aspects of Ophthalmology, at the Hospital; by Dr. Risien Russell.
- 2-5 Practical instruction at the Hospital; by the Hospital Staff.

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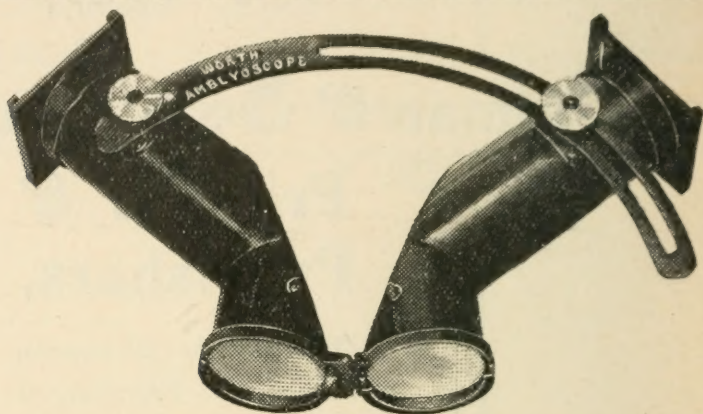
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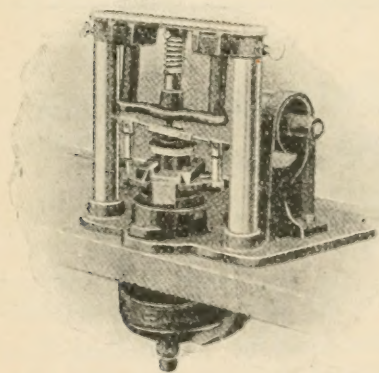
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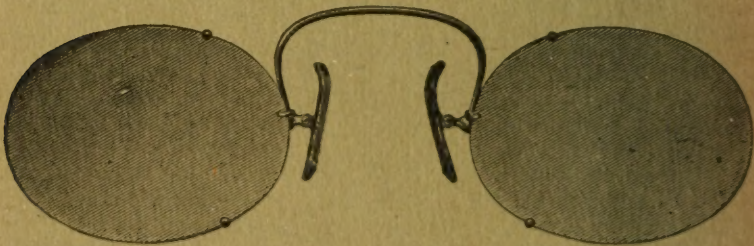
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